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VETERINARY MEDICINE

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VOL. XX **No. 12**

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IN CANINE ECZEMA AND PRURITUS

To a request for advice in an obstinate case of pruritus in a dog, Dr. J. C. Flynn, Chief Contributor of the section on small animal practice in the North American Veterinarian, replied as follows:*

> "We are having good results in treatment of skin diseases of obscure or doubtful etiology with Pellitol, made by Pitman-Moore Company, Indianapolis, Indiana. We have found that lime and sulphur dip, if applied warm, will clear up many cases of mild eczema that fail to respond to dieting and other modes of treatment."

In human eczema, pruritus and kindred skin diseases, thousands of physicians recognize Pellitol as an unusually efficient remedy. The above quotation simply presents additional evidence of the fact that veterinary therapeutics differ but little from those of human medicine, and that similar conditions frequently respond to similar treatment. In properly selected cases of canine skin affections, Pellitol will prove worthy of careful trial.

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* North American Veterinarian, August, 1925, page 38.

Veterinary Medicine

VOL. XX DECEMBER, 1925 No. 12

PRIZE WINNERS FOR DECEMBER

1st Prize, T. B. Hinkle, Ashley, Ohio.
2nd Prize, E. W. Miller, Winchester, Va.
3rd Prize, O. E. Gladfelter, York, Pa.
3rd Prize, G. W. Browning, Mobile, Ala.
4th Prize, H. J. Davis. Aylmer, Ontario.
4th Prize, Frank N. Wheatley, Ft. Qu' Appelle, Sask.

The usual quota of good reports were received for December in the clinical report contest, and the following awards were made.

First prize: Fifteen dollars to Dr. T. B. Hinkle, Ashley, Ohio, for his report on antepartum prolapse of the vagina in a cow.

Second prize: Eight dollars to Dr. E. W. Miller, Winchester, Va., for his report on nymphomania in a mule.

The judge was of the opinion that two of the manuscripts were equally worthy of third place, also that two possessed like merit for fourth place. Therefore, it was decided to award two third and two fourth prizes, as follows:

Third prize: A yearly subscription to Veterinary Medicine to Dr. O. E. Gladfelter, York, Pa., for his discussion of fright disease in dogs, and to Dr. G. W. Browning, Mobile, Ala., for his paper on animal castration.

Fourth prize: Two dollars to Dr. H. J. Davis, Aylmer, Ontario, for his report on intestinal worms in poultry, and to Dr. Frank N. Wheatley, Ft. Qu'Appelle, Saskatchewan, for his discussion of the use of anesthetics.

This completes the contest for the year. The response from veterinarians has been all that could be desired, and numerous readers have written us that they consider the case reports one of the most valuable features of Veterinary Medicine.

The aim of the contest was to stimulate a greater interest among practitioners in recording cases and imparting observations that might be helpful to others, and it is hoped that with the impetus now acquired, veterinarians will continue to write up the many interesting and helpful things that they experience in practice from time to time.

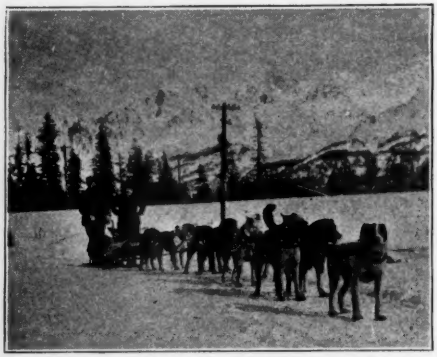
Since the beginning of the contest last January, a total of 290 manuscripts by 186 contributors have been entered. Practically all of this material has already been published in these pages. The reports have covered a wide variety of subjects and have come from an extensive geographical area, as will be noted from the following table:

	Reports	Contributors
Alabama	8	2
Alberta	3	2
Arkansas	4	2
British Columbia	1	1
California	9	8
Colorado	4	4
Connecticut	2	2
Delaware	1	1
Florida	1	1
Georgia	3	3
Hawaii	3	2
Idaho	2	2
Illinois	7	6
Indiana	10	7
Iowa	20	16
Kansas	16	10
Kentucky	8	3
Louisiana	3	3
Manitoba	2	2
Maryland	1	1
Massachusetts	3	2
Michigan	2	2
Minnesota	14	5
Mississippi	1	1
Missouri	12	7
Montana	1	1
Nebraska	2	2
New Hampshire	1	1
New Jersey	2	1
New York	16	12
North Carolina	4	3
North Dakota	1	1
Ohio	17	13
Oklahoma	5	3
Ontario	13	5
Oregon	2	2
Pennsylvania	15	7

	Reports	Contributors
Philippine Islands	1	1
Rhode Island	1	1
Saskatchewan	7	4
South Carolina	3	2
South Dakota	4	3
Tennessee	1	1
Texas	5	4
Utah	1	1
Vermont	1	1
Virginia	5	3
Washington	12	5
West Virginia	13	3
Wisconsin	8	6
Australia	1	1
British West Indies	5	1
England	2	2
Wales	1	1
	290	186

The showing of case reports from every state in the United States except five that have very few practitioners in them, is a truly remarkable one, as is also the number of Canadian provinces and foreign countries represented in the contest. It is unlikely that any other magazine of any kind or class in all the world derives its reading matter (other than commercial reports) from such a widely and evenly distributed source. To a superlative degree, Veterinary Medicine mirrors veterinary practice on this continent, and in the forceful parlance of the hour, "we don't mean maybe."

We are not yet ready to announce the plan that will be followed next year to encourage the reporting of clinical cases, but readers may rest assured of an even greater supply of such reading matter for 1926.



A sledge team that traveled from Seward to Fairbanks, Alaska, in the early days. From photo sent by Dr. A. T. Kinsley.

EXPERIMENT STATION AND OTHER REPORTS OF INTEREST TO VETERINARIANS

In accordance with a policy inaugurated in this publication in 1905, we again use considerable space in this, the last issue of the year, to announce the publication of agricultural experiment station bulletins, reprints from scientific journals and other publications of interest to veterinarians.

Of course, many such publications are announced from month to month, but lack of space or the opportunity to examine them occasions at times some delay, and it is particularly in the December issue that an effort is made to list all such publications for the year that have not previously been announced.

The list is of particular interest at this time because of the question raised by the policy committee of the A. V. M. A. as to the effect that some of these bulletins may have on veterinary practice. To be in a position to render an intelligent judgment in this matter, readers should procure and examine these reports. Practically all may be had free upon request directed to the stations issuing them or to the authors.

Numerous extracts are published in this issue from some experiment station publications, because of the interest in them aroused by the report of the policy committee of the A. V. M. A. Weigh and consider the effect that such material may have in the hands of those inadequately trained or untrained in veterinary medicine.

One cannot but be impressed by the marked attention given in these publications to nutrition and nutritional ailments, a subject presenting exceeding difficulty in drawing a clear line of demarkation between what is the proper field for the scientific feeder, and for the physician—between what is physiological and what is pathological—between what is preventive and what is curative, and if the former, what part can appropriately and economically be carried out by the intelligent livestock owner and what part is within the province of the veterinarian.

Like most questions the one raised by the policy committee of the A. V. M. A. has two sides; and a program based upon a prejudiced view is likely to fall short of accomplishing what its proponents hope for it. It will be generally admitted that there is too much meddling in veterinary practice by those unqualified and untrained for it. The remedy for this condition is not so readily arrived at. It is more than doubtful if it lies in the enactment of more laws; or even if more laws would solve the problem,

that that is the most feasible or the most direct or the quickest way to reach the solution.

BULLETINS OF INTEREST TO VETERINARIANS

The Effect of Vasectomy on Swine, by B. L. Warwick, University of Wisconsin. Reprint from The Anatomical Record, Sept., 1925.

The Use of Rabbits in the Study of Infectious Abortion, by B. L. Warwick, E. M. Gildow and F. B. Hadley, University of Wisconsin, Madison. Reprint from Journal of Infectious Diseases, July, 1925.

A Fatal Disease of Feeder Lambs, by B. A. Beach, Wisconsin Agricultural Experiment Station, Madison. Reprint from Journal of A. V. M. A., August, 1925.

Phosphorus in the Live Stock Industry, by Arnold Theiler, H. H. Green and P. J. Du Toit, Department of Agriculture, Union of South Africa, Pretoria.

Year Book and Biennial Report of the Missouri State Poultry Board, 1923-24. T. W. Boland, Sec-Treas., Mountain Grove, Mo.

The Blood and Urine of the Cow in Milk Fever, by C. E. Hayden and L. B. Sholl, New York State Veterinary College, Cornell University, Ithaca, N. Y.

White Snakeroot Poisoning, by Robert Graham and I. B. Boughton, Circular No. 295, University of Illinois, Urbana, Ill.

Tuberculosis of Swine, by L. Van Es, University of Nebraska, Lincoln, Neb., Circular 25.

An Inquiry Into the Cause of the Increase of Tuberculosis of Swine, by L. Van Es and H. M. Martin, University of Nebraska, Lincoln, Neb. Research bulletin 30.

The Minnesota Agricultural Experiment Station, University Farm, St. Paul, Minn. An illustrated brochure describing the work of the station.

Fat Digestion, Absorption, and Assimilation in Man and Animals as Determined by the Dark-Field Microscope and a Fat-Soluble Dye, by S. H. Gage and P. A. Fish, Cornell University. Reprint from The American Journal of Anatomy, Sept., 1924.

Blackhead and Other Causes of Loss of Turkeys in California, by H. W. Graybill. Circular 291, University of California College of Agriculture, Berkeley, Cal.

Bovine Infectious Abortion, by M. F. Barnes. General Bulletin No. 404, Pennsylvania Department of Agriculture, Harrisburg, Pa.

Announcement of the Division of Veterinary Medicine, 1925-26, Iowa State College, Ames, Ia.

Report of the Veterinary Director General, year ending March 31, 1925. Department of Agriculture, Ottawa, Canada.

Clean Milk, by E. H. Farrington and L. C. Thomsen. Circular 189, Extension Service of the College of Agriculture, University of Wisconsin, Madison, Wis.

The Endocrine System and Growth, by P. A. Fish, New York State Veterinary College, Ithaca, N. Y. Reprint from The Cornell Veterinarian, April, 1925.

The Effects of Lactic Acid on B. Pullorum, B. Avisepticus, and B. Sanguinarium, and Its Possible Role in the Control of Intestinal Diseases of Poultry, by B. F. Kaupp and R. S. Dearstyne. Reprint from Poultry Science, August-September, 1925.

Hypochlorite in Medical Practice, a digest of various authoritative discussions on this subject. Compiled by the Zonite Products Co., 342 Madison Ave., New York City.

Report of a Chemical, Bacteriological and Biological Investigation of Zonite, by the Pease Laboratories. An account of the results of laboratory tests to determine the value of Zonite as a germicide and local antiseptic. Zonite Products Co., 342 Madison Ave., New York City.

What to Do to Become Physically Fit. ..Information for those disqualified for active military service because of physical defects. U. S. Public Health Service, Washington, D. C.

The Campaign Against Malnutrition. Public Health Bulletin No. 134, prepared by the advisory committee on foods and nutrition of the National Child Health Council. U. S. Public Health Service, Washington, D. C.

Typhoid Fever: Its Causation and Prevention, by L. L. Lumsden. Public Health Bulletin No. 69. U. S. Public Health Service, Washington, D. C.

The Prevention of Simple Goiter, by O. P. Kimball, M. D. Reprint No. 832 from Public Health Reports. U. S. Public Health Service, Washington, D. C.

The Essentials of Smallpox Vaccination, by J. P. Leake and J. N. Force. Reprint No. 686 from Public Health Reports. U. S. Public Health Service, Washington, D. C.

The Citizen and the Public Health, by John W. Trask. Reprint No. 150 from Public Health Reports. An account of the individual's relation to the health of the community. U. S. Public Health Service, Washington, D. C.

Diseases of Colorado Feeding Lambs, by I. E. Newsom and Floyd Cross, Bulletin 305, Colorado Agricultural College, Ft. Collins, Colo.

Fowl Typhoid and Fowl Cholera, by B. E. Kaupp and R. S. Dearstyne, Technical Bulletin No. 27, Agricultural Experiment Station, Raleigh, N. C.

Blackhead in Chicks, by Sivert Eriksen, Missouri State Poultry Experiment Station, reprinted from Poultry Science, Vol. IV, No. 6.

Agricultural Extension Service and The Veterinarian

In this issue, we reprint in its entirety the report made by the policy committee of the A. V. M. A. at the Portland meeting and published in the October issue of the Journal of the American Veterinary Medical Association. Following the reports are published some, but not all, of the discussions of it in the meeting.

It may have been noted that very little of the material appearing in other American veterinary publications is reprinted in Veterinary Medicine, and perhaps some explanation is due for this extended reprint from the association journal.

Veterinary Medicine has taken the stand for nearly a score of years that, in a science where development is as rapid as has been the case in veterinary science and in a profession where progress is as marked as it has been in the veterinary profession, the current literature of the profession is a vital matter to everyone in it, and the contents of the various veterinary publications in America have a value to veterinarians so far in excess of their cost that no veterinarian can afford to be without any of them, and hence that the publications are doing their readers an injustice if they reprint extensively from one another, thus causing a duplication in the hands of readers taking more than one of them.

The latest published list of the membership of the American Veterinary Medical Association contained the names of more than 2,000 subscribers to Veterinary Medicine. Presumably these subscribers have already read the report and the discussion alluded to, and we ask their indulgence for using space in this issue for material with which they are presumably already familiar, our reason for so doing being the very great importance of the subject discussed in the report, not alone to members of the A. V. M. A., but to all veterinarians in America. It is new to two-thirds of our readers.

While not all of the discussions of this committee report are published, it is believed that those published cover fairly comprehensively all points brought up in the discussion. In view of the abbreviated discussion reproduced, it should be pointed out that such restriction in the distribution of technical information regarding veterinary medicine as was suggested by the report and the discussion, was advocated primarily on the ground that it will be advantageous to the livestock industry and secondarily only that it will be of benefit to the veterinary profession. The attitude being that the welfare of the veterinary profession depends upon a prosperous and extensive livestock industry, and that anything that contributes to the welfare of this industry will indirectly benefit the veterinary profession that serves it, and conversely a policy that is injurious to the livestock industry is inimical to the veterinary profession. Read and study the report and discussion. Comment of readers on this subject will be welcomed.

Perhaps this is not an inopportune time to again refer to the submission of articles to Veterinary Medicine for publication. It has been stated many times in these pages that material of interest to the profession is solicited for exclusive publication only. It is a flagrant breach of ethics to submit for publication the same material to two or more periodicals at the same time. This does not apply to news items, notices of meetings and brief reports of meetings, but does apply to original articles, papers read at meetings, clinical notes, case reports and discussions.

The Cornell Veterinarian and the Journal of the A. V. M. A. have repeatedly urged this common sense requirement upon their readers, and it would seem that all should be acquainted with the desire of the veterinary press in the matter. Still, to the annoyance of the editors, two or more of the veterinary publications occasionally find the same material on hand for publication, or what is more annoying still, find that they have published the same articles simultaneously.

It is primarily in the interest of readers that this rule is insisted upon. The veterinarian who wishes to keep up to date should read more

than one veterinary periodical, and most veterinarians do read two or more such publications. Every veterinary journal in America contains single articles, at least occasionally, that are worth to the reader more than the cost of subscribing for the publication containing them for a period of years. This is true even of the newest publication in the field—the North American Veterinarian. Although editorially this raw recruit reminds this writer of nothing else so much as of a loud speaker on a vacuum tank, it does contain from time to time splendid contributed articles.

IMMUNIZATION OF ANTHROPOID APES AGAINST TUBERCULOSIS

The first detailed report of a long projected experiment on the vaccination of monkeys against tuberculosis in their native environment has recently been published. From time to time there have appeared in French medical literature accounts of research on the immunizing power of a bacillary vaccine, prepared by Calmette and Guerin, and called for simplicity BCG. This vaccine consists of tubercle bacilli greatly reduced in virulence by prolonged cultivation on potato or agar saturated with bile containing 5 per cent glycerol. Calmette and Guerin have repeatedly asserted that this vaccine confers immunity without producing anatomic tubercle. According to Calmette, the only effect of massive injection of this bacillus is "general disease which is like typhoid fever and which cures itself spontaneously after fifteen to twenty days without producing the slightest tubercle formation." Yet calves, guinea-pigs, rabbits and monkeys treated with doses of a few milligrams of the substance, according to the accounts, appear to become highly resistant to infection with virulent tubercle bacilli.

The latest stage of this investigation, a phase planned by Calmette years ago, but postponed by the war and the distress left in its wake, has dealt with the infection of man's nearest biologic relations in their natural environment. A series of experiments truly romantic in their conception and prosecution have been carried out in a tropical environment on the coast of French West Africa, under the auspices of the newly created Pasteur Institute of Kindia. The effort has been made to simulate human conditions as far as is possible in any animal experiment, through the use of the manlike apes and chimpanzees, close to their native home and exposed to infection in natural ways, but under scientific control. One may perhaps judge how earnest has been the effort to approximate human rather than laboratory conditions, by the designations conferred on the research material of this simian colony, which answers not to the A_1 or B_{35} of the usual laboratory experiment, but to the more sympathetic appellations of Gertrude, Hector, Ginette, Jacques, Catherine and Tonio.

The results reported by Wilbert, who states that the program of Calmette has been followed, may be thus summarized: Fifteen chimpanzees were studied in three groups. The fifteen included three that were vaccinated with BCG, five that were infected with virulent tubercle bacilli, and seven normal animals, which served as nonvaccinated controls. The groups were so constituted that vaccinated and nonvaccinated animals were exposed equally to infection from the artificially infected animals. The five infected chimpanzees all died of tuberculosis. Of the seven exposed, nonvaccinated controls, four died of tuberculosis and three of intercurrent, nontuberculous infection. The three vaccinated animals have remained in good health. Fifty-nine apes lived under similar conditions of mutual exposure. Of these, nineteen were vaccinated, twenty were infected with virulent tubercle bacilli, and twenty served as noninfected, nonvaccinated controls. Of the nineteen vaccinated, eleven died of various causes without showing any evidence of tuberculosis at necropsy. The other eight have remained in good health. Of the twenty nonvaccinated controls, nineteen died of tuberculosis and one of intercurrent acute infection. Of the twenty infected animals that were allowed to spread their infection to the other animals of the series, nineteen died of tuberculosis and one of intestinal obstruction.

Two methods were used in the vaccination, ingestion and subcutaneous inoculation. They proved equally effective. One hundred milligrams of BCG was tolerated by the animals without harm. No tuberculous lesions were produced by the vaccine. The only change noted was a transient swelling of the lymph nodes regional to the site of subcutaneous inoculation. The usual procedure was subcutaneous inoculation with 50 mg., or five ingestions of 50 mg., each at intervals of from eight to ten days. In a few instances, the vaccination was repeated after some months. Wilbert is satisfied that the means employed have conferred resistance lasting at least one year, and that new protection can be given by revaccination.

The results are promising, to say the least. They are presented by Wilbert in condensed

form, with little comment and without extravagant claim. The spirit of the report is that which has animated this investigation since its inception fifteen years ago; free imagination in its planning, but conservatism in the reporting and interpretation of results. Throughout its course a temperate reluctance to publish prophecy has been exhibited, and in the latest article no hint is given of the hopes or fears of the author and his collaborators concerning that toward which they are obviously striving, vaccination in man.

The members of the medical profession, however, are veterans with respect to tuberculosis cures and immunizing methods. Thirty years of dashed hopes have followed Koch's first reports of the immunizing properties of tuberculin. It takes more than one favorable report now to convince any one of any discovery in the therapy of tuberculosis. The present attitude is a skepticism directly proportional to the enthusiasm of the latest claimant in the fertile field of tuberculosis cures, which for years has produced at least one sure tuberculosis remedy a month. The Calmette method, on the other hand, has been developed with such steadiness of purpose and simplicity of claim as to command close attention and constantly interested expectancy.—Journal American Medical Association.

THE PRESENT STATUS OF THE INFLUENZA PROBLEM

It is now clear that the first estimates of the loss of life caused by the influenza pandemic of 1918 were too low. The disclosures of the Census of British India of 1921 and other data that have since come to hand make an estimate of 20,000,000 deaths in the whole population of the world probably not wide of the mark. This is incomparably the worst catastrophe of the sort that has visited the human race since the Black Death of the Middle Ages.

In modern times the ravages of neither Asiatic cholera nor the bubonic plague can vie with those of influenza. In Bombay in the worst plague epidemic the city has known (1900) the highest total mortality in one day was 433; at the peak of the influenza epidemic on October 6, 1918, the day's mortality was 768. In England and Wales the highest mortality rate previously reached for any epidemic since registration of deaths began was 3,033 per million population in the cholera outbreak of 1849; the mortality rate from influenza in 1918-19 (46 wecks) was 4,774 per million population (Supplement, Registrar General's Report, 1920).

Judging by the past, nothing is more certain than that we shall some day have another visitation of this destructive infection. It is a commonplace that if it were to descend upon us tomorrow we, as public health workers and students of disease, should be little if at all better equipped to deal with it than we were seven years ago.—E. O. Jordan in American Journal of Public Health, November, 1925.

ULTRA-VIOLET RAYS IN THE TREATMENT OF ANIMAL DISEASES

"Artificial sunshine"—light from quartz mercury-vapor lamps—is being successfully employed in the treatment of injured and diseased animals at the veterinary clinic of the Kansas State Agricultural college by Dr. E. J. Frick and Dr. J. F. Bullard.

So good results have been obtained from the use of the ultra-violet light produced by these lamps that Doctor Frick and Doctor Bullard believe them a valuable adjunct in the treatment of many animal diseases and have found that in some cases the light treatment is sufficient to bring about complete recovery.

Of eight typical canine distemper cases, the veterinarians reported, five recovered in from two to four weeks time after a daily exposure of 20 minutes to the ultra-violet ray. Three dogs not given the ray treatment during the same period died. Only five days of treatment with 20 minutes of exposure daily to the ray were required to cure an acute case of moist eczema on a large bull terrier brought to the clinic. This rapid recovery was completed in many other moist eczema cases.

In the treatment of wounds the ultra-violet ray also has been found beneficial. Doctor Frick and Doctor Bullard cite one case, that of Melcum Burr, one of the fastest coursing greyhounds in America, which was brought here for treatment after having torn loose a toe in a race. The leg was bandaged too tightly and in three days all the bones of the injured foot were exposed. After surgical treatment, the wound was exposed to the violet ray and the treatment was repeated daily. The wound healed with unusual rapidity and with almost entire absence of pus formation.

In research work on animals by Dr. J. S. Hughes of the department of chemistry at the college it has been shown that ultra-violet light increases egg production and hatchability of eggs and prevents and cures outbreaks of weak legs and rickets in chickens. Dr. C. Little of

the University of Maine and Dr. W. Bovie of Harvard have found through research that the proper use of ultra-violet light is a complete substitute for sun in the raising of chickens.

Doctor Frick and Doctor Bullard predict that ultra-violet radiation will find its place in the near future in the practical veterinary treatment of diseased and injured animals.—The Kansas Industrialist.

Privy Council Medical Research Council Tuberculin Tests in Cattle

This is a special report containing approximately 200 pages of descriptive matter and charts illustrating the subject matter. The report is the findings of a tuberculin committee appointed by the British Medical Research Council in 1920, with instructions to investigate the use of tuberculin as a diagnostic and therapeutic agent in human tuberculosis. In the beginning, this committee was of the opinion that tuberculin tests and particularly the subcutaneous test was par-excellent in the diagnosis of tuberculosis in cattle.

Investigation of the tuberculin tests in cattle was not contemplated by the committee until 1921, when urgent requests were made to the Ministry of Health because of the unreliability of some tuberculin tests of herds that had been supplying certified milk. After some preliminary investigations, the committee found there were many stock owners and some veterinarians who reported unsatisfactory results, particularly from the subcutaneous test. At this time, the committee was enlarged to include representatives of the veterinary profession, in order that a complete survey could be made of tuberculin testing of cattle.

The following problems presented themselves for investigation: first, a positive reaction in cattle to the subcutaneous tuberculin test implies infection with tuberculosis. Second, what are the comparative values of the different tuberculin tests,—subcutaneous, intradermal and ophthalmic? Third, what varieties of tuberculin are most efficient? Fourth, can the present method of standardizing tuberculin be improved?

"Because of the irregular and inconstant results of the subcutaneous test the committee made a special effort to check the findings of other investigators as to the value and reliability of the intradermal test. The site employed has heretofore generally been one of the subcaudal folds. This area was originally selected, probably on account of the fact that the test was first employed as the only method practicable for the testing of ranch cattle. Cattle in this country can not well be restrained in a manner similar to that employed on ranches, and it is partly on this account that inconvenience has been experienced by practitioners in carrying out the test. Quite apart from the question of suitable means of restraint, it will readily be appreciated that the site is not one which would be selected for preference, for the following reasons:

(a) The test is difficult to do in the caudal fold, the movement of the animals, the thin nature of the skin, the absence of subcutaneous fat and of loose subcutaneous tissue making it very easy for the operator to inject too deeply, the result of being a subcutaneous injection.

(b) There is risk of fecal contamination in the tail region; such contamination may give rise to a septic swelling, which would be misleading.

(c) It is impossible to take satisfactory measurements in the caudal region.

(d) In the tail test the comparison with the opposite side is frequently fallacious, owing to the two caudal folds being asymmetrical.

(e) It is very difficult to perform a double intradermal test in the caudal region.

(f) The "plastering" with fecal material of the operator when carrying out the test is a real objection when the test can be done more aseptically and efficiently in another region of the body.

"In order to overcome these difficulties and also those attending the subsequent observations of the reaction, the neck has been selected as the site of the intradermal test in these experiments. This area has been previously employed by several workers, Lignieres, Roemer, Joseph, Bang, C. O. Jensen, Christiansen, and others, and it is surprising that the method has not come into more general use. The method was worked out very completely by Christiansen and Stub in 1910. These authors employed single injection, measurements being taken both before, and at intervals after the injection. The diagnosis between a positive and

negative reaction was based upon the result of these measurements."

As carried out by the committee, the test consisted of two stages: a preliminary sensitizing injection, followed by the test dose. The tuberculin used was undiluted and the dosage for each injection consisted of 1/10 cc. An area from 2 to 6 square inches was shaved at the site of injection and the injection was made by the use of glass barrel syringe, the short strong needle of dental type, with a point 2 or 3 m.m. long. The needle is inserted obliquely into the fold of the skin, held by the thumb and first finger. The second injection is usually 48 hours after the first, although the animal should be inspected 24 hours after the sensitizing dose. A reaction consists of tumefaction of the skin and the tumefied area, although variable in size, will be found to be soft, hot, tender, and not definitely circumscribed.

This committee also found that the deeper the injection of tuberculin made into the derma, the larger the swelling. This same finding has been reported by American veterinarians. A relatively large percentage of no lesion cases have been reported by various state and Bureau officials of the intradermal reactors in this country. In this relation it is interesting to note the summary of the pathological findings of the British Commission.

"The results of the pathological investigation can be summarized thus:

Total number of animals examined	114
Reactors	39
Non-reactors	75=62 per cent.

"Out of 39 beasts giving a reaction to the intradermal test, 37 gave a positive guinea pig inoculation—94.9 per cent.

"Out of the 75 beasts which failed to give a reaction to the intradermal test, 74 gave a negative guinea pig inoculation—98.7 per cent."

This report indicates that the percentage of non-lesion reactors and the percentage of tuberculous non-reactors is almost negligible. Animals of various ages were tested and the intradermal test was found especially reliable in young animals.

Very careful examinations were also made of the milk, to ascertain whether or not the tuberculin test in any way rendered the milk unfit for human consumption during the time or immediately after the test. It was definitely shown that although there may be slight modification in the volume of milk, there are no definite variations in the composition and so far as could be ascertained, the milk was wholesome and not injurious.

The committee arrived at the following conclusion after a careful investigation of the different methods of testing, checked by autopsy and pathological findings including guinea pig inoculations.

"1. The subcutaneous tuberculin test appears to be a perfectly satisfactory test for the presence of tuberculosis in cattle when carried out under the laboratory conditions of a scientific trial. It is not a satisfactory test when carried out under ordinary farm conditions: the discrepancies then prevailing are often so numerous as to vitiate the general application of the test for practical purposes.

"2. Of the different tuberculin tests, the intradermal test as described in this report appears to be superior to the subcutaneous tests, while the ophthalmic test must be regarded as a subsidiary test.

"3. The intradermal test is an accurate test for the presence of tuberculosis in cattle, the percentage of error being extremely small. In support of this statement it may be mentioned that in the Committee's experience with animals diagnosed as tuberculous by the intradermal test which have not shown tuberculosis on naked eye examination, post portem have been proved to be tuberculous by microscopic examination and inoculation of guinea pigs.

"4. The intradermal test has these further advantages over the subcutaneous tuberculin test:

(1) No temperature observations are required.

(2) The animal need not be kept at rest before and during the conduct of the test.

(3) Interference with the ordinary farm routine is not required.

(4) Only three observations are usually necessary.

(5) A smaller quantity of tuberculin is needed for the test.

(6) The technic, although at first slightly more difficult than that of subcutaneous injection, is easily acquired.

"5. The variety of tuberculin employed is 'Old Tuberculin.' It appears to be immaterial whether a bovine or human strain is used in its manufacture.

"6. The tuberculin used must be of proved high potency; it is administered undiluted for both the intradermal and the ophthalmic test.

"7. In reading the ophthalmic test when combined with the intradermal test, it appears necessary to make frequent examinations of the

animal's eyes, as in every case when the reaction has been positive it has been apparent 24 hours after the second instillation."

It is apparent that this report is reliable, as all the investigations were checked and rechecked and carefully executed. Any one interested in tuberculosis eradication will find it worth while to obtain and carefully study this report.—A. T. K.

Report of the Policy Committee, A. V. M. A.*

This Committee has been impressed by the fact that the policy which was adopted last year creates a Policy Committee but fails to outline the duties and activities of that Committee. Since the policy, as adopted, is very broad and comprehensive, your Committee felt that no additions should be considered, but that our attention should, for the present at least, be centered upon matters which would protect and further the interests of the practicing veterinarian.

With the above in mind, our attention has been given to the relationship of the practicing veterinarian and the county agent. In past years this question has received so much publicity that we felt there would be numerous instances of county agents stepping into the realm of veterinary medicine. Accordingly, inquiries were mailed to those who would be likely to be familiar with the situation and a conference was arranged with the Director of the States Relations Service, at which conference it was expected that these specific complaints would be considered. Our request for specific instances met with a surprisingly small response and, of the replies received, only one complaint appeared to justify presentation to the proper authorities. It is your Committee's belief that the county agent problem, insofar as it applies to general practice, is much less acute than in previous years and we believe that the better relations which apparently exist can, to a large extent, be attributed to a sensible tolerance and an appreciation on the part of each party for the other.

Your Committee has given serious thought to the activities of some county agents who are actively engaged in purchasing or jobbing materials which are used by the farmers in their counties. We, as veterinarians, are particularly concerned with this problem, because among the articles which the county agents handle in this manner are anti-hog cholera serum and hog cholera virus, and because, in many instances, his activities include vaccination or instructions for farmer vaccination. It cannot be denied that the amount of serum handled in this manner is rapidly increasing. Some producers, attracted by the purchasing power of these county agents and farm bureaus, have bid against each other until serum is contracted for at less than its production cost and at prices considerably lower than it can be purchased by the veterinarian. Since such county agents encourage and teach farmers to vaccinate their own swine and to use serum contracted for in the manner described, the incentive to dispense with veterinary vaccination is becoming greater and the veterinarian's income is being materially curtailed.

The seriousness of this situation cannot be over-estimated. It is believed that in 1924 less serum was used by graduate veterinarians than for several years; whereas, the serum used by, or sold to, county agents, farm bureaus and farmers who did their own vaccinating, materially increased.

It is unfortunate that in our profession, as in other classes of society, the many must suffer for the few. It cannot be denied that to a large extent the present movement for vaccination by others than veterinarians originated with live stock owners who were disgruntled by the exorbitant charges which a few veterinarians made for their services or with the unsatisfactory results which were obtained by a minority of vaccinators. This dissatisfaction was seized upon by alert county agents, seeking to strengthen their own positions, and by some serum producers, who, regardless of the consequences, sought only a means of increasing sales.

If the existing conditions are not rectified, the veterinarian will continue to be confronted with a gradually increased number of clients who vaccinate their own swine and who may eventually use most of the serum which is produced. Under these conditions, self-preservation might necessitate a change of policy on the part of those commercial organizations which have confined their sales to veterinarians, thereby re-

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moving a factor which has had great stabilizing influence.

Fortunately, this situation is not equally serious in all states and it is believed that a special effort should be made to obtain relief in the states where the condition has assumed serious proportions. Iowa, which, in the past, has suffered extensively from these conditions, seems to be working out its own salvation, due to wise and constant efforts. We are advised that the Iowa Department of Agriculture and the Iowa Farm Bureau Federation are cooperating with the Iowa Veterinary Association to eliminate the existing evils. Under this arrangement, county agents who commercialize their activities and farmers who hold vaccinating permits, but who illegally vaccinate swine other than their own, will be prosecuted.

It is believed that where relief is needed in other states, the initiative will, of necessity, have to be taken by state or local associations. When the proper investigations have been made and bona fide evidence of improper or illegal activities has been obtained, the state or local organization should then have the assistance of the Policy Committee of this organization. The outstanding veterinarians of the affected state and the Policy Committee of the A. V. M. A. should then arrange for conferences with the state directors of extension, or other officials from whom relief may be expected, and whenever assistance can be obtained from the States Relations Service in Washington, the matter should be carried to that body by the Policy Committee. All of these things can be done, but it is practically impossible for the Policy Committee to take the initiative in a given state or to make an accurate, dependable survey of local conditions.

The policy adopted last year took official cognizance of the need for limiting veterinary education in agricultural colleges and agricultural extension services. This Committee desires to reiterate, in the strongest possible manner, the need for the proper limitation of veterinary education in these institutions.

Although there are a few outstanding exceptions, it is believed that the average veterinarian, engaged in teaching veterinary subjects in an agricultural college, attempts to limit his course to those subjects which will be of general and practical value to his students in their subsequent live stock activities. Without questioning the motives of the veterinarians who are so engaged, we feel that the results may justly be viewed with considerable apprehension. Graduates of agricultural colleges who become county agents assume that their veterinary education is sufficiently thorough to permit their engaging in veterinary activities and to teach their constituents how to dispense with the practitioner.

Now we face an equally serious situation in the form of veterinary teaching under instructors of secondary agriculture in our high schools. Prof. F. L. Griffin, of the University of California, recently sent a questionnaire to over three thousand teachers of secondary agriculture in the high schools of forty-three states, to determine the extent to which veterinary medicine should be taught and engaged in. A perusal of his report indicates in no unmistakable manner, that secondary agriculture will soon be more radical, insofar as veterinary instruction is concerned, than its ancestral prototype, the agricultural college.

In his questionnaire, Prof. Griffin listed seventy-four conditions and asked for an expression as to whether or not these high school teachers have treated such conditions and how many felt competent to do so. To show the attitude of these instructors, the replies of 1120 to twelve of the most important are submitted.

DISEASE	A	B
Abortion	135	358
Retained placenta	345	370
Blackleg	178	283
Milk fever	469	437
Poisoning	138	408
Tuberculin testing	150	384
Treating wounds	575	317
Colic	448	393
Equine distemper	221	426
Hog cholera	353	393
Farrowing trouble	330	414
Swine parasites	408	376

(In the column headed "A" the figures indicate the number of high school teachers who reported that they had successfully treated the diseases indicated. In the column headed "B" the figures indicate the number of high school teachers who acknowledge that they had not treated the diseases indicated, but felt capable of doing so.)

The following excerpts, taken from Prof. Griffin's conclusions, indicate the consensus of opinion of these agricultural teachers and the radicalism which now exists:

"The replies to questions 1 and 2 in the questionnaire as well as the statements made in the supporting letters indicate that the vocational teacher of agriculture should be prepared to give instruction dealing with the common diseases of live stock as well as to demonstrate the minor surgical operations (such as treating simple wounds, dehorning, castrating lambs, pigs, and calves, docking lambs, etc.)"

"The following procedure is suggested for the guidance of the agricultural teacher in his com-

munity work, it being understood that he has had sufficient training and experience to justify his veterinary service (See VI):

"(a) In the absence of a veterinarian, respond to all calls from farmers for assistance in treating the 'common diseases' and performing the 'minor operations' (See V). Such assistance should be strictly educational in nature, i. e., given for the purpose of teaching the farmer how to handle similar future contingencies himself. The farmer should himself be encouraged to give the treatment or to perform the operation, the teacher's function being to direct and only secondarily, to demonstrate.

"Since the service is educational rather than professional, the teacher is not justified in accepting any fee for his services, although he may be reimbursed for any actual expense involved.

"By teaching the farmer to help himself, the instructor will discourage any tendency of being called on repeatedly by the same farmer to perform tasks that are disagreeable or because the service is free. If a veterinarian is available, but the case is really a minor one and not justifying his services, the teacher may function as indicated above but he should use great discretion and be absolutely sure of his ground before proceeding.

"(c) In poultry raising districts it may happen that veterinarians, even when available, are not prepared to handle poultry diseases, or do not care to deal with such minor problems. In such cases the teacher should be prepared to diagnose and treat the common diseases of poultry. His accomplishments in this field would include the ability to vaccinate for chicken pox."

Veterinary instructors in our agricultural colleges may feel that their courses are sufficiently limited, but if the questionnaire report of Prof. Griffin is any criterion, it becomes evident that agricultural college graduates, who become county agents or teachers in our high schools, believe themselves capable of teaching, demonstrating and treating everything in veterinary medicine except major surgery and acute infectious diseases. Unless their mistaken idea is corrected and unless veterinary education of agricultural college students is limited, there will, in the near future, be little need for the practitioner who has spent several years preparing to practice his profession. In their place there will be the most extensive and serious form of quackery which the profession has ever known. The practicing veterinarian is in urgent need of protection from these conditions and unless such protection is obtained, it is difficult to see how young men who are alive to the situation can be expected to matriculate in our veterinary colleges.

The policy of the Association outlines the veterinary instruction which should be given by agricultural colleges. That our recommendations are sound is attested to by Prof. Griffin, who states:

"Only the highest of professional motives can be attributed to leaders in Veterinary Science for apparently discouraging any veterinary work among agriculture teachers. They know very well the limited training which most agricultural college students receive in Veterinary Science. They are also aware of the difficulties many experienced practitioners have in diagnosing certain diseases and in successfully treating same. . . . . Certainly no impediments to a remunerative practice, such as the competition of incompetent practitioners, should be thrown in the way of a well trained veterinarian."

It is essential that a determined effort be made to unify, and bring within reasonable limits, the veterinary teaching in agricultural colleges. It is, therefore, recommended that the Policy Committee be authorized to arrange a conference with the veterinarians on agricultural college faculties and that the Budget Committee make the necessary appropriation for the expenses of the Policy Committee.

L. A. Merillat, M. Jacob, H. Preston Hoskins, Cassius Way, E. A. Cahill, Chairman.

Discussion by E. E. Wegner

Mr. Chairman, I am interested in the report of this Committee, as much as any man in this room, because, at the State College of Washington, we have both the teaching of agriculture and veterinary medicine.

I feel quite sure that the courses offered by the State College of Washington are similar to the courses offered to the agricultural students in other similar institutions. It seemed to me, from the report of the Committee, that the Committee had assumed that all of the knowledge possessed by the county agents and agricultural graduates was given to those people in the agricultural colleges.

Now, that is not the only source of information on matters pertaining to animal diseases, and I believe the Committee ought to consider the other sources of information, as well as the courses that are given to them directly by the veterinarians connected with the agricultural schools.

Is it really very hard for an educated man—and graduates of agricultural colleges are edu-

cated men—to get information? They can read any kind of scientific literature and understand it. Are not the farmers well educated people? How far do they have to go to find all kinds of literature on animal diseases, written in a form that any sensible man can read and understand, and where does it come from? Does it come from the faculties of the agricultural colleges? Does it come from the veterinarians who are attached to the agricultural colleges, or does it come from the experiment stations all over the country? Does it come from the commercial houses? Does it come from our own Bureau of Animal Industry, or where does it come from? That is the thing I think you ought to take into consideration, as well as to discuss the amount of information that is given to the local veterinary student.

It would seem to me that a man could take many of the bulletins that are to be had for the asking, and he can find an abundance of information upon the very subjects that have been discussed here by our Committee. Abortion: Why, he can find dozens and dozens of them, and, if he wants to follow it along, I believe a sensible man—I do not say he would be competent to treat abortion—can get a flood of information. I have had these high school teachers come in any say, "'I have this, that and the other bulletin that I am using in my high school work."

I can not say to them that that information is not authentic. He cites me right back to the source of it. The best men in the country are writing this information and sending it to us free. When he gives that to his students, what are you going to say to him?

He wants one on parasites in swine. I can get all kinds of information on that—and it is authentic information—and I question very much whether the information he is giving out was obtained in any course received during his work in college.

It seems to me that it is a somewhat bigger problem than just the matter of the relationship of the agricultural graduate and the veterinary teacher on the agricultural college staff, and while this thing is being considered, I would like to see the whole thing opened up and given a full discussion.

Discussion by H. Preston Hoskins

I would like to say a few words on this subject, as a member of the Policy Committee which drafted the report you have just heard. The members of the Committee were not only aware of, but they also gave much consideration to these other things which Dr. Wegner pointed out. We are only too well aware that there are these other sources of information which he mentioned. We realized that we had a big job on our hands, and we had to start some place. We realized that the great majority of the veterinarians who are connected with agricultural colleges are members of this Association. We thought we would probably be able to work on them more easily than upon others who were not so close or amenable to control. It was with that thought in mind that the Committee report contains only the one recommendation.

I have had quite a little correspondence with Professor Griffin, the author of the questionnaire report referred to in the report of the Committee, and from something that Professor Griffin said in one of his letters, I gained this impression: In the state of California they have graduates of practically all of the agricultural colleges in the United States. At different times during the year, these men get together and have their conferences. They compare notes. The man from Wisconsin tells how much instruction in veterinary subjects he received, and the man from Minnesota tells how much he received, and the man from Indiana likewise, and so with the man from Missouri. The first thing that strikes them is the discrepancy in the amount of instruction in veterinary subjects given in these different colleges, and the fellow who did not get very much wonders why he did not get more, he wonders why he did not get as much as the other fellows.

Another impression—and I do not believe I am wrong in this—gained from a statement made in one of Professor Griffin's letters was to the effect that these men who are under the impression that they did not receive enough veterinary instruction are asking the authorities at the University of California to give them more, to give them what they did not get.

Discussion by C. H. Stange

It seems to me that questions of this kind must be met in positive and not in negative manner. When you begin to tell people they can not have information, you are getting into a difficult position, and you are going to have trouble on your hands. We all know about medical cults. We all know about osteopathy and chiropractic and the various medical cults. I think the veterinary profession can very well review the situation in medicine. Osteopathy was not started as a medical science. It was started as a health and moral cult. It gradually

developed into a medical cult because there was a demand on the part of the public for something that was not being furnished by the medical profession. When they began to tamper with these, the osteopaths began to see they had their shortcomings, and gradually added bacteriology and a number of other subjects to their course.

Chiropractic, as it is today, is an offshoot of osteopathy. They believe in sticking to the old ideas.

I simply mention this to show that we must not allow the gap to develop between the veterinarian and the stockman. I think that is the dangerous thing, because, as sure as that happens, this kind of quackery that has been referred to is going to fill in that gap and, therefore, I say we must meet this situation by positive and not by negative methods.

We have these men coming to us for lectures on animal diseases and things of that kind, and we say, "Sure, you can have those lectures," but in our catalog the prerequisites are specified; for instance, you must have bacteriology and pathology before you can take a course in veterinary medicine. There are the prerequisites for those courses; all you have to do is meet them. When they meet them, they have taken the course in veterinary medicine. The information is there; all they have to do is meet the same requirements that the veterinary student must meet. Of course, they do not want to do that.

I believe that we should, instead of trying to hold these people down or tell them they can not have information, go out and help the veterinarian so that the stockman will prefer the veterinarian to these agricultural teachers and county agents. That is my idea of meeting this situation, and we have been working on a plan—we have had one conference and we may have more—trying to work out a system of veterinary extension that will go directly to the veterinarian, much along the same line as the system employed in Pennsylvania, because we believe that that is the best way to meet a situation of this kind, and I doubt very much whether you will get very far by telling people they can not have certain things. If they want information, it is pretty hard to get away from it, but when they come and want that information—a course of lectures—they must meet the requirements of the veterinary student. That means a course in veterinary medicine, and they do not want that.

That is my idea, gentlemen. We must not take the position that people can't have information, but we must take the position that we are going to make the stockman prefer the veterinarian to anybody else.

Discussion by E. A. Cahill

Mr. Chairman, it is always unfortunate that a committee report of this kind must of necessity be somewhat short. I presume it may even appear that the Committee has failed to take cognizance of a great many matters.

As Dr. Hoskins said a moment ago, the Committee has tried to take into consideration all of these various factors. The points raised by Dr. Wegner have been given consideration. We know that the Bureau of Animal Industry bulletins are available to these men. If this thing is to be carried on, the Committee should confer with the Bureau. We know they can buy textbooks and get this information from extension service departments, but we haven't control over those men. We haven't control over the veterinarians teaching in agricultural colleges, but they are members of this Association. This Association has adopted a policy and has laid down definite ideas on how much veterinary education should be taught in an agricultural college.

Now, if commercial organizations are giving out this information which you and we know the live stock owner is not in a position to utilize—he may think he is, but he isn't—if commercial organizations are giving out improper information, and if the members of those organizations are members of this Association, they should be expelled. One was expelled yesterday for that very reason. If we have other men in other lines of industry—teaching—who are teaching things which the farmer or the agriculturist is not in a position to utilize and assimilate, and in the same breath destroying the practicing veterinarian, I ask you, is he better than men who put it on paper and under another name? The Committee thinks not and your Committee thinks that that information can be given, and is being given, in institutions in the manner mentioned by Dr. Mayo. We know of institutions, and you know of institutions, where the students coming out of agricultural colleges feel very well satisfied with the veterinary education or teaching that they have received. They are well satisfied, go back to the farms and make good live stock owners, and are the very best clients that the practicing veterinarian has. They need it, and our veterinarians, members of this Association, give it to him. We ought not to deny them the information, as Dr. Stange says. We thought it was right to deny the American public liquor,

and look where we have gotten. The same thing is true here. They must get the information, but they must get it in the proper way. Where is this thing leading to?

This Committee only touched the surface on this. If you will bear with me, I will bring out one or two other points incorporated here. Speaking of these high school teachers, Professor Griffin's report reads:

"The teachers in service, who are not adequately prepared for such service, should be able to overcome this deficiency either by means of special session courses or being granted leave of absence so as to attend an institution offering such instruction during the regular school year."

What courses? Courses better than the ones they received, from his point of view; courses where they get still more veterinary education, and he even admits, then, that the vast majority of these men are not competent to do this. Professor Griffin says:

"Finally, it is obvious that no instructor should attempt to give any form of veterinary instruction or assistance unless by practical experience and special training he is qualified to render same. If this injunction is observed it will eliminate fully ninety per cent of the teachers now in the service."

From the man's own lips he admits that ninety per cent of the teachers giving this education are not competent. You say it is not getting more serious? Again:

The kind of courses and number of semester hours necessary to give such training varies in the different institutions. The instructional needs, as expressed by the teachers, indicates that in addition to basic courses in bacteriology and entomology the following are essential:

"Farm Sanitation and Hygiene
"Anatomy of Domestic Animals
"Physiology of Domestic Animals
"Diseases of Domestic Animals
"Veterinary Parasitology
"Clinical Demonstrations and Practice."

Those are the things they teach. Suppose this is done and is in effect ten years; who is going to teach these men? Who is going to give these men anatomy? Your veterinary schools will be empty and there will not be men, like Professor Stange, who are qualified to go in and teach these things to the agricultural students. The trouble with this whole program is that these agricultural colleges are following the line of least resistance. I think they are sincere, are trying to give their agricultural students something that they think will be helpful. They are overlooking the fact that a few years from now they will have done so much damage, that they will have no veterinary profession, through destroying the men who are in this profession.

Discussion by G. H. Glover

I believe that there is more virtue, a thousand times over, in the Golden Rule, "Do unto others as you would have them do by you," than there is in the Ten Commandments, "Thou shalt not."

I have listened to this argument with much interest, because I have been teaching so-called veterinary elements to agricultural students for more than twenty years. I can't help but think how, in the city of Detroit, they passed ordinances which prevented Henry Ford from driving an automobile; the contraption scared the horses. In Prince Edward Island they would not allow an automobile for many years.

You can not block the wheels of progress. Now, what I am getting at is this: In the last analysis, it is up to every fellow, in every trade and every profession, in every walk of life, to make good. You cannot keep information away from an intelligent graduate of an agricultural college. As has been so well said, it is all available from agricultural reports, from the United States Department of Agriculture, down to the simple treatment given in the class-room in colleges. The negation of "shall not,"; "County agent, you must not teach veterinary medicine; you must not teach the treatment of diseases; you must not practice them"—well, all these things are hard to get after because you haven't got the grip, and you can't control it, but I do favor this: First, that we do everything in our power, through the States Relation Service, to curtail the efforts of county agents in this direction; and, second, in our agricultural colleges, let us be careful what we teach. There is no occasion for taking agricultural students in to see clinical cases. They never do in our college. They never see one, and agricultural students soon are given to understand that if they show their heads inside the outside gates of the veterinary hospital, they are going to carry pieces of meat and clotted blood (laughter) or they are going to take a bath or something is going to happen. They never show their heads. Now, then, the nurses in our human hospitals are given lectures on first aid, and that is right; that is well. I believe it is possible to give such instruction to agricultural students as shall pertain to the care and management of animals on the farm, and a few simple things like first aid, but I do not believe

they should be given any instruction in basic subjects like anatomy, physiology or parasitology, or anything of that kind.

We have just one semester's work. I give it myself, and I claim that I have become a past master in the art of deception. I try to do a whole lot of lecturing and, after it is all over, if they have received anything worth while, when it comes to treating disease, I am sure I have never discovered it. (Laughter.) But when you are all through, in the last analysis, come right down to this basic thing; that the veterinarian has got to make good. He has to demonstrate to the farmer and stockman that his services are worth while, that they are worth the price and that he cannot afford to employ a county agent with his "stock doctor" book in the back of his car, and he cannot afford to employ any pretenders, but as long as he thinks that he can get information free from the county agent, or from the high school instructor, and that that information is worth while, he is going to do that thing, instead of employing a veterinarian and paying the price.

It is simply up to us, men, to make good, and I say that we can't block the wheels of progress or evolution. We are moving on; we are progressing, and where we want to get busy is on the line of better service in the profession of veterinary medicine, in order that we may render a more appreciated service, one that the farmer and stockman is willing to pay for, and we will get a whole lot farther than we will by trying to go to the other end of the thing with our negation, "Thou shalt not know anything about veterinary medicine." (Applause.)

Discussion by E. R. Steel

I have been trying for the last two or three years, since I was elected to represent the veterinarians in Iowa, to work out a solution to some of these problems, and I confess it is a pretty hard problem. Sometimes I get discouraged and do not know just what to do next, but we are carrying on, anyhow.

Dr. Cahill wrote to me for information regarding this report. I did not have any recent information except that which we had collected two years ago in the state of Iowa. So I sent out a questionnaire, about the middle of June, to the veterinarians of Iowa. I got 124 replies, from 68 of the 99 counties in Iowa.

It is very hard to get the information from the veterinarians, as Dr. Cahill stated. They won't come across with it. They do a lot of kicking and complaining, but when you ask for definite information, they won't come out with it.

I asked for information regarding commercialism of the farm bureaus. Of the sixty-eight counties that replied, thirty-two were engaged in some form of veterinary commercialism. There were thirteen counties of the ninety-nine, in which the county agent was directly handling serum and virus.

Two years ago there were 800,000 cc. of serum used by the 12,000 permit holders in Iowa. Last year, in Iowa, according to the Secretary of Agriculture, there were eight or ten million used by the farmers, ten times as much as the year before.

Now, maybe this growth was due to the depression in agriculture. Last year, in Iowa, we had a frost that ruined our corn crop; the price has been poor for three or four years, and the farmers have been hard hit. We will know more about this after this year. Things are looking pretty prosperous in Iowa.

I have taken this question up from the standpoint of legality with the farm bureaus in Iowa. I have gone direct to the head of the Farm Bureau Federation with this problem. I have stated that the state of Iowa has no right to engage in competition with the tax-payers. There is no precedent, in this country, for an organization of farmers, or any one else, being subsidized by the state to engage in competition with other cities, and I did not believe that it was right for the farm bureaus of Iowa to go together and buy serum cheaper than the veterinarians could buy it, and furnish it to the farmers, using public funds to engage in that business. If they wish to engage in business, we would welcome their legitimate competition.

The officials of the Farm Bureau Federation have agreed to cooperate so far as they can in checking this practice. They do not encourage it; in fact, they have offered to cooperate in this way: They realize the county agent is getting into a lot of trouble by meddling in these things. After all, the solution of this problem is going to be determined in the end by whether or not the men trained in this way can actually do this work.

I asked ,in this questionnaire, how many outbreaks of hog cholera have been set up in the last two years by lay vaccination. Twenty-four reported ninety-one different outbreaks set up by farmer vaccination. That is rather an unfair question. It is circumstantial. All we can conclude is that there was a center of infection established from lay vaccination. That in itself will discourage the farmers from vaccinating their own hogs.

We talk a good deal about conditions. We say when conditions improve these things will subside. However, when the grass is short is when the cattle will break down the fences. It is up to us, then, to keep our fences up. After the conditions have improved, then we will have a multiplicity of quacks.

I asked the question, whether or not the farmers were vaccinating neighbor's hogs. There were forty-six replies that indicated they were. We are securing the cooperation of the Department of Agriculture in stopping that, and I think that can be controlled.

Now, as regards information: They tell us we are trying to put a fence around ourselves. We have not asked that information be denied farmers. We have simply stated, in the policy of the American Veterinary Medical Association, how this teaching shall be directed, what is best from the standpoint of the live stock industry of the country; not what is merely best for the veterinarians themselves. If men in these agricultural colleges can teach agricultural students and farmers to do this work intelligently in such a short time, work that is not given in the veterinary courses until the senior year, then there is no need for veterinarians going to school for four or five years. One or the other is a mistake. I do not believe personally that the men can be taught these subjects. I think from that standpoint the Association can take a stand that it is not right to the live stock industry to proceed with the teaching of veterinary subjects to agricultural high school students or agricultural college graduates.

Now, when we ask for things, we have to protect ourselves. These fellows will come back with charges that the veterinarians themselves are incompetent. We have to meet that. So we have worked out a plan in Iowa, as Dr. Stange has told you, of increasing the individual efficiency of the veterinarians themselves. I have heard criticisms of veterinarians and practitioners. The practitioners of America are exactly what the profession of America has made them, and when we criticize the practitioners we are criticizing the veterinary profession of America. It is up to us, then, if the profession does not measure up to the standard, to increase that efficiency. So we have worked out a plan and Dr. Stange has inaugurated it, to send out veterinarians from the college to conduct one or two-day courses in poultry diseases, or anything that the veterinarians request, to build up the efficiency of the individual veterinarians.

I want to congratulate this Association, from the standpoint of the practitioner, on the stand it has taken in the adoption of this policy. I think a simple statement that is made in the policy is all that is necessary. If the veterinarians in these agricultural colleges will confine their instruction within the limits stated in the policy, we will have no trouble in the future with this work.

HOW THE MINNESOTA STATION MAKES RESULTS AVAILABLE TO THE PUBLIC

The work of getting the findings of the experiment station in Minnesota and of similar institutions elsewhere to the people would proceed slowly if it had to be done only through students at schools and colleges, valuable as the work of both is. Consequently as a part of the enterprise has been organized a large and effective staff of extension workers, whose business it is to carry accurate agricultural and home-life instruction to the people on their farms and in their homes. This staff is made up of a director and a corps of specialists in field crops, horticulture, dairying, animal husbandry, plant and animal diseases, home economics, and all the rest. These specialists work throughout the state, co-operating with the county agents and farm bureau units and farmers' clubs. The county agents are a part of the organization, under the supervision of state and district leaders who have their headquarters at University Farm, and are in constant touch with the specialists of the experiment station and of the extension staff. The whole boys' and girls' club movement, moreover, is linked up with the extension work of the University Department of Agriculture and owes its success largely to its supervision and encouragement by that department.

MORE GOOD MOUNTS FOR THE CAVALRY

For use in breeding and riding horses, the War Department has purchased nine thoroughbred and three Arab stallions. Besides this, Mr. Thomas Fortune Ryan, the well-known horseman and financier, has donated a thoroughbred stallion to the Government. The Government now has in this service 392 stallions, the great majority of which are in the hands of farmers and breeders who are interested in the production of light horses.—Army and Navy Journal.

The Removal of Foreign Bodies from the Food and Air Passages of Small Animals, by the Bronchoscope and Esophagoscope

E. Lee Myers, M. D., and Andrew Darling, M. D., D. V. S., St. Louis, Mo.

It has been our custom for several years past to do experimental work on dogs in order more adequately to study the endoscopic problems which appear in our patients, and to develop that coordination of eye and hand which is the sine qua non for success in this specialty. We have found that there is a definite place for this work on small animals, for not only can foreign bodies be successfully removed from their food and air passages, but the question of their presence can be differentiated from other conditions. In such a procedure there should be no fear of losing a valuable animal such as a house dog, if one keeps within the reasonable limits of morphinization. Dogs tolerate morphin to a high dosage, so for each six pounds of body weight, a grain of morphin is used an hour before the work is contemplated. Hence, for a twenty-pound dog, three and one-half grains of morphin are necessary. We have found it advisable to omit the meal before examination. The endoscopy should be started one hour from time of injection. The dog then is in a stuporous condition, but will awaken on slight noises, such as the scraping of a chair on the floor, the jarring of a door, etc. The slightest unusual movement of the instrument in the larynx or esophagus, will cause a sound from the animal, which to the examiner's ear should tell him that he is not doing so well with his examination. So, instrumental dexterity and gentleness are essential in order that no damage be done, because of the semi-awake condition of the animal patient. Providing that no undue force has been used and no injury to tissues produced, the following day the dog will lie around in a half stuporous condition and will eat little, but will be none the worse for his experience.

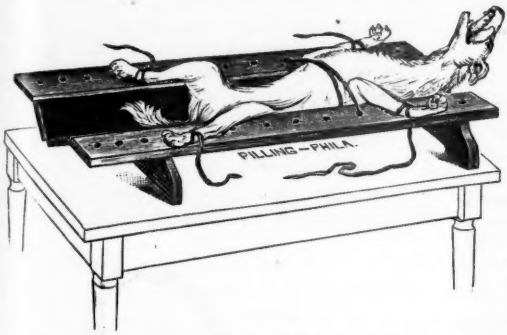


Fig. 1. An excellent dog board. The method of trussing the dog is of especial importance. The cut is quite explanatory.

One of us in reviewing the literature on small animals, was impressed by the paucity of reports reviewing the diseases of the esophagus and trachea. Hence we had at first only our own experience to guide us as to value of these newer methods of examination. We were, of course, familiar with the simpler methods of examination of the food passages of the small animal, and do not attempt to decry their use, but we make this plea for the usual endoscopy in the more difficult cases, or those in which other simpler methods of examination have failed.

The equipment may consist of an improvised dog-board, or the one lately devised by Pillings. The dog is trussed over and under his chest, the forelegs being brought down toward the hips. The head should be over the edge of the table, so that the head may be moved in any direction.

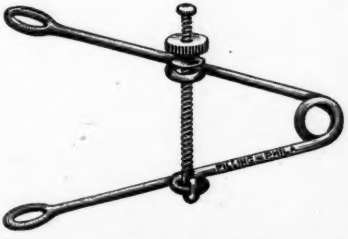


Fig. 2. Mouth gag, Jackson's model; an extra nut added by Dr. Darling makes the instrument somewhat more convenient with larger dogs.

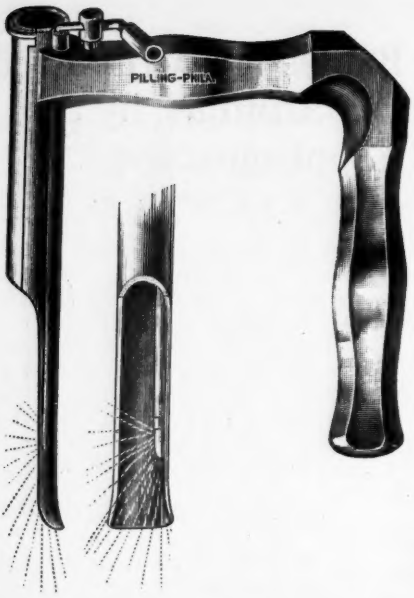


Fig. 3. Adult Laryngoscope, instrument to be used for the introduction of the bronchoscope. The slide is removable, and the entire instrument is taken out, leaving the bronchoscope in place.

Jackson's mouth gag, to which one of us (Dr. Darling) has added an extra nut, has proven of advantage, for a large dog will often close the gag notwithstanding the stiff spring. A bandage is used to secure the position of the gag, which is otherwise apt to slip out of the mouth. It also seems to make the animal more comfortable.

The examination of the dog's larynx is made with the ordinary Jackson adult laryngoscope. This instrument may be used to examine the lower portion of the hypopharynx, but we have found the Jackson hypopharyngoscope of singular advantage, it having in several cases helped us to find buried foreign bodies. If it becomes necessary to extend the examination further down, the 9x45 m.m. esophagoscope will be necessary. Here, too, spittle from the mouth and secretion from the stomach will interfere considerably unless a suction apparatus of some sort such as the one which slips over the faucet, (Brawley's suction apparatus) is used. For those not having water power, Jackson's portable suction set or any of the other suction apparatus can be used. Bronchoscopic sponges can be cut to fit the various instruments needed, or can be obtained from a surgical supply house.

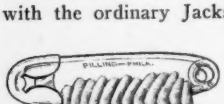


Fig. 4 Bronchoscopic sponges, different sizes, 4, 5, 7 and 9 m.m.

The following case reports will, we think, prove our contention that there is a definite place for peroral endoscopy in veterinary medicine.

Case No. 1. A Boston Terrier bitch, seven months old, swallowed a piece of liver attached to a fish hook and was seen dragging a fishing pole down the side of the stream. The owner tried to dislodge the hook by traction, but not succeeding, he brought the dog to the hospital. The dog was anesthetized with two grains of morphin, which caused vomition, but did not dislodge the hook. Endoscopic examination revealed the following: On the left side below the opening of the esophagus, a small piece of string was seen extending downward toward the stomach. The string being in this position it was apparent that the barbed hook was higher up. Although this was not visible, it was found upon palpation with the spatular end of the laryngoscope. The fish-hook was rotated around in a complete arc, using the string as a tow line,

Fig. 5. Down-jaw forceps to be used with the Hypopharyngoscope.

Fig. 6. Hypopharyngoscope, useful in removing foreign bodies in the cricopharyngeus.

and protecting the barb so it would not entangle again. It was thus recovered. Duration of operation—5 minutes. Dog recovered.

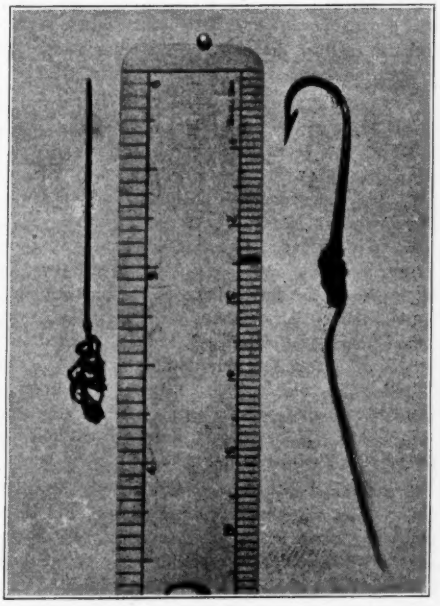
Case No. 2. A dog which had been playing around a work-basket was brought to the hospital because the owner was positive that the animal had swallowed a needle. On the outside of the dog's neck could be palpated a large mass as if an abscess was forming, yet upon endoscopic examination a dark object about one-thirty-second of an inch in length was seen at the mouth of the esophagus. This proved to be a needle, which was gradually withdrawn with some little difficulty as the dog had not been given sufficient morphin. Duration of operation —4 minutes.

Case No. 3. A cat was brought to the hospital with a history that the owner thought it had been kicked. An opening in the neck was found with a sinus leading toward the larynx. Probing gave an indistinct feeling of crepitation. The cat was anesthetized with ether. Endoscopic examination was negative, examination being made, both of the trachea and esophagus. The 4 m.m. bronchoscope was used for the trachea, and a 7 m.m. full lumen esophagoscope for the esophagus. Later one of us (Dr. Darling) cut down upon the sinus and removed a small piece of bone. In this case the endoscopic examination was of advantage in proving the non-existence of a foreign body. The same may be said for the next case.

Case No. 4. A police-dog, nine months old, which had been in training for a month learning the police commands, developed a marked swelling on the anterior part of the neck. Salivation and marked respiratory distress soon followed. Under morphin anesthesia, swelling and redness of the tracheal mucosa were found, especially in the anterior wall. This convinced us that the condition was due to undue force applied by means of the choke collar, which is used to enforce the commands of the trainer. The dog recovered under antiphlogistic measures.

Although many small animals have been endoscoped by us in the course of the last few years, no fatality has been caused either by the use of instruments or by the morphin. One word of caution might be given here, namely, care should be used not to get the handle of the esophagoscope or bronchoscope under the teeth of the animal, for in such case the animal might cause the bronchoscope to be pushed into its mediastinum.

We have anticipated using a 7 or 9 m.m. endoscope as a uteroscope, but at the present time



Needle and fish hook removed from esophagus in cases 1 and 2.

have no conclusions to offer. Dr. Darling has done a little work trying to remedy some cases of dystocia, and the bronchoscope should prove of great value here. This suggestion was prompted by the statement made by Dr. E. L. Quitman of Chicago, who has been using successfully a proctoscope as a uteroscope to examine the uterus.

Those of our readers who wish to develop this method of examination, will do well to equip themselves as follows:

1 Adult laryngoscope, Jackson-Pilling.

1 9x45 c.m. Esophagoscope, Jackson-Pilling.

1 Hypopharyngoscope, Jackson-Pilling (can be dispensed with).

3 Sponge-carriers, adult type.

1 Jackson down-jaw forceps, to be used through laryngoscope.

1 Jackson (Darling modification) mouth gag, Pilling make.

1 Practice battery.

2 Conduction cords.

Other instruments may be added from time to time as the occasion demands.

Poultry Diseases*

J. H. Schroder, Oxford, Iowa

Fowl Cholera

Fowl cholera is an acute and chronic, highly infectious disease, caused by the Bacillus avisepticus.

Symptoms: The onset is usually sudden and may pass unobserved. The finding of dead birds under the roosts and in the nests is the first indication, or it may take on a more chronic form and birds may live five or six days, showing loss of appetite, great prostration, staring feathers, sitting around ball-shaped with the head and tail down, comb dark, swaying gait, severe greenish yellow diarrhea, rapid emaciation. If no treatment is given, the loss is very great.

Postmortem findings: The liver is first noted and is three or four times its normal size, dark in color, and tears easily. The intestines contain a frothy material, greenish in color. There are small petechiae on the heart and occasionally on the mucosa of the intestinal tract.

Mode of spread: The disease is spread by exchange of birds from one flock to another, or fowls taken to shows may carry the infection home to the rest of the flock. Eggs from infected flocks and chicks hatched in infected surroundings, are another source of spread. The infection may also be carried on the feet of other animals and man from premises where the disease exists. Likewise it may be carried by streams and wild birds.

Treatment: First there should be a thorough disinfection of the grounds, water and feed troughs with a 7 per cent solution of carbolic acid. All hen-houses should be whitewashed, the sick removed and dead birds burned. Vaccination gives excellent results. Medicinal treatment consists of intestinal antiseptics; bichlorid and sulphocarbolates or the combination fowl cholera tablet have given me good results.

Internal Parasites

Parasitic infestation of the intestinal tract is found in most fowls, and serious infestation is not rare. When present in small numbers, the parasites do not cause much harm, but under conditions that favor their multiplication, they will destroy entire flocks. At any rate, flocks infested with large numbers of worms are unprofitable. The birds become unthrifty and suffer from constipation and diarrhea. Young fowls are severely affected. The round worm, Ascaris inflexa, is very common and is found in about half of the autopsies.

Infestation is brought about by food and drinking water contaminated with droppings laden with parasite eggs. Thus a few affected birds may cause the infestation of an entire flock.

The next most common worm, the Heterakis papillosa, is found in the blind gut or cecum. This worm is much smaller than the round worm, being one-fourth to one-half inch in length. When present in large numbers, they produce considerable irritation and cause an unthrifty condition in the birds.

Treatment for internal parasites consists of keeping the feed and watering troughs as clean as possible and giving tablets composed of nicotine, calomel and thymol, or nicotine alone may be given in the form of black leaf 40. Thymol should be given in the case of tapeworm.

External Parasites

The group of biting lice have the mouth arranged for biting and cutting. The body is flat. They live on the epidermis, feathers and secre-

* Presented at Eastern Iowa Veterinary Association meeting, Cedar Rapids, Ia., Oct. 7, 1925.

tions of the host. They produce much irritation, and the effect of large numbers on fowls is quite marked. The birds so infested scratch and pick at their feathers, refuse to eat and show signs of being drowsy. Young chicks infested with lice sit moping with wings hanging down and usually die in about a week. Lousy chickens show a great tendency to wallow in dust. The effect of infestation on older birds is not so severe, but it is quite noticeable in loss of flesh and falling off in the production of eggs. External parasites are most common during the hottest months of the year, although they may be found at any time.

In treating young chicks for lice, grease the heads, necks, under the wings, and around the vents, with lard and sulphur or salt and butter. Lard alone is quite effective. While this is an old-fashioned treatment, yet it is efficacious. In the treatment of older birds, the use of sodium fluorid is very effective. There are lice powders on the market that are absolutely worthless. A louse powder invented by R. C. Lowry, formerly of Cornell University, is very good. It is composed of three parts of gasoline to one part of crude carbolic acid, 90 per cent to 95 per cent, mixed with enough plaster-of-paris to take up all the moisture.

Mites, as they are commonly known, are also of great economic importance. These are eight-legged parasites and are nearly invisible to the naked eye but easily discernible with a hand lens. There are numerous kinds of mites, but I shall deal only with those commonly met with.

The scabies mite is common and produces leg scabies. This parasite attacks both chickens and turkeys. It always attacks the unfeathered parts of the leg. The parasite crawls under the scales, irritating the legs. Vesicles appear and later rupture, then these dry and form scabs. Treatment consists of removing the scabs by soaking in warm water and sodium chlorid, one tablespoonful to each quart of water. After the removal of the scab, wash the legs with water and soap and apply gasoline. If only a few birds are affected and are not valuable, it is best to kill and burn them, as treatment takes some time. After treating or destroying the affected birds, the premises should be thoroughly disinfected with lime and sulphur dip.

Red mites are known as blood suckers and are found on all parts of the host. When well filled with blood, they are red or blue in color. Infested birds are unthrifty, cease laying, become poor, and many are found dead under the roost. The same treatment as for lice is effective. As these mites are found on the roosts, in nests and all crevices and cracks in the henhouse, the disinfection of the premises should be thorough, removing all roosts and nests, using 10 per cent carbolic acid and 2 per cent dip.

Roup

There are three types of roup; namely, the nasal, the ocular and the diphtheritic. The ocular type is first noted by an inflammation of the mucous membrane covering the eyeball. As the disease progresses, the eyelids stick together and hold the watery material as it accumulates until the parts bulge out. Sneezing is noted, also shaking of the head and expulsion of mucus. There is often diarrhea, and birds become weak with loss of appetite and show difficult breathing.

The nasal type is characterized by a watery discharge from the nostrils with an offensive odor. Later the discharge becomes mucopurulent, closing the nostrils, causing bulging of the sinus below the eye.

The diphtheritic type affects the mouth, and diphtheritic ulcers occur, yellowish white in color.

All forms of roup are generally followed by secondary infections, and there are no very marked symptoms until secondary infection takes place, aside from a characteristic odor. Once familiar with this odor, one can hardly mistake it, and it affords a means of early diagnosis.

In instituting treatment, the correction of bad hygiene and sanitation cannot be too strongly emphasized, as such defects constitute the predisposing cause. Diseased birds should be isolated and all dead fowls burned. Preventive vaccination should be practiced as the results are very encouraging. Medicinal treatment should vary according to the lesions.

The ulcers may be painted daily with tincture of iodin. The eyes and nasal passages should be opened, the catarrhal material removed, and the parts washed with a solution of baking soda. In the early stages of the nasal type of the disease, chlorin gas gives good results. The birds should be placed on the floor of the building while undergoing such treatment as the chlorin gas has a tendency to settle to the floor. Intestinal antiseptics should be used in all forms of roup along with other treatment.

Chicken Pox

This disease is manifested by small nodules, varying in size from a pinhead to that of a pea. It is at times accompanied by roup, although I have found this combination to be rare. The nodules are at first firm and red in color. Later these ulcerate and spread forming sores. Treat-

ment consists of sanitation and administration of intestinal antiseptics the same as in fowl cholera. The nodules may be touched with silver nitrate and later covered with carbolated vaselin.

Bacillary White Diarrhea

This disease is by far the greatest menace to the poultry industry in America. I believe I am safe in saying that the loss from white diarrhea is greater than from all other poultry diseases combined.

Bacillary white diarrhea is caused by the Bacterium pullorum, and without treatment, once it has gained a hold in a flock, the mortality will reach 90% or even 100%.

Symptoms: There is a drooping of the wings, the feathers are ruffled, the birds are huddled together, eyes closed with a peeping, sleepy appearance. The abdominal yolk is not absorbed, and there is a whitish brown discharge from the bowels, which usually adheres to the vent. The disease is more prominent in the summer months than in early spring. Chicks are as a rule infected when hatched, although a few infected chicks will infect the rest of the flock by contaminating the food.

Treatment: Chicks should not be hatched from eggs laid by hens with ovarian infection. Where eggs for hatching do not come from flocks certified as free from bacillary white diarrhea, chicks should be treated as soon as hatched, giving sulphocarbolates and sour milk, and providing plenty of sunlight.

Acute Indigestion in Calves

J. F. DeVine, Goshen, N. Y.

A well nourished calf, perhaps one of the finest and sleekest in the herd, varying in age from one week to three months, will suddenly refuse part or all of its milk, stand around or lie about stupid and listless for a few minutes to a few hours, either gradually or suddenly developing brain symptoms, standing with its head pressed against the side of the wall or some hard object, and at any time during the attack it may have a paroxysm of bleating, followed by all the manifestations of epilepsy—lying on its side, stiffening of the muscles, pirouetting of the eyes, champing of the jaws, frothing from the mouth, possibly emissions of feces or urine, in some cases death following in a few minutes. Others finally relax, particularly if the case has received proper treatment early. The cases that relax may or may not be seized with subsequent convulsions. If the convulsions are repeated the termination is usually fatal. If, however, they are warded off, the animal may gradually take an interest in its surroundings, possibly stand up again in a few hours and by careful nursing become normal. But even in the recovered case there is usually more or less lingering of the brain symptoms, resembling immobility in the horse, for a few days to a few weeks. Death usually ensues so rapidly that a veterinarian seldom has an opportunity to treat the case until too late, unless those in charge are familiar with the seriousness of the malady. Where a veterinarian is called immediately when a calf refuses its feed or where an owner or herdsman has had considerable experience with this ailment and is on the watch for it, there is a possibility of saving some of the cases.

Autopsy usually reveals a mass of undigested casein in the calf's stomach, varying in size from one to eight or ten pounds, of the consistency of old, tough cottage cheese. All the rest of the organs are normal so far as can be determined macroscopically.

Treatment

Death usually sets in so rapidly that treatment is of little avail, but if treatment can be begun before the brain symptoms are manifest, progress may be aborted or the convulsions mitigated with a resultant recovery. In fact, in one particularly large herd of Guernseys where this trouble caused the death of many calves, with the assistance of a very capable herdsman, I have been able to save over 50 per cent of the calves attacked, and finally have eliminated the trouble entirely by a properly diluted diet. The treatment that has served me best is full doses of morphin or lobelin sulphate the minute the calf is noticed to be at all abnormal, followed immediately, if the calf can swallow, by a pint of lime water; this is to be followed every half hour with from eight ounces to a pint of warm normal salt solution, depending upon the age of the calf. This is to repeated from two to half a dozen times, depending upon the case. A high enema consisting of warm water and oil should be forced in with a pump and tube

at the very outset and repeated several times during the day.

I have used lobelin sulphate, hypodermically, and chloral per rectum with apparent advantage in some cases, in either warding off or influencing the severity of the convulsions.

Treatment is best applied in the form of prevention.

Prevention

This acute trouble has long been recognized among breeders of the Channel Isles breeds; as a matter of fact there have always been individual cows in the breeds where the solid content of the milk is so unusually high, that more or less trouble has been experienced in raising their offspring on the dam's milk. This trouble has sometimes been manifest by a diarrhea, the cause of which was attributed to too much fat, which in most cases was true, since butterfat, when in excess of the amount which can be digested and assimilated, has a similarity to other oils and fats, acting as a cathartic.

As the knowledge of chemistry of milk increased, experts advised the dilution of the whole milk with skim milk as a remedy for this condition. This sometimes worked satisfactorily providing the amount fed so diluted was not in excess of what the calf could properly and wholly digest. With the increase of the breeding and selection of high-testing dams or families, mated with sires of high-testing families, producing in turn more regularly high-testing dams, which are so desirable for large official records, acute indigestion became more prevalent, and to get in close touch with a large herd of Guernseys or Jerseys and inquire into their calf trouble usually meant that one would hear of an occasional death from this so-styled "peculiar and uncontrollable ailment."

In searching about to find relief, animal husbandmen and others, advised as a remedy that which seemed to help in a measure, in controlling the diarrhea, i. e., the dilution of the whole milk with skim milk and giving less of it.

While I was attending a Guernsey breeders' meeting a few years ago, a remedy for this ailment was asked for by a breeder, who had lost several calves. A professor of animal industry from one of the state colleges who was addressing the meeting, repeated the advice of diluting the milk with skim milk, making no mention of a lesser amount. I could not refrain from telling him that he was dispensing bad advice. This is obvious if we stop to consider the nature of the complaint and the composition of the milk.

We must first get it clear in our minds that the trouble in these cases is due to lack of digestion of casein rather than lack of digestion of fat. Fortunately, the lack of digestion of fat is usually manifested by a diarrhea, which to an intelligent calf-feeder sounds the warning that the calf is getting too much.

Secondly, we must recognize that the milk of all high-testing cows is not only high in fat but is also high in solids, not fat, which of course includes the proteids. For instance, if we should have a Holstein milk testing say 3 per cent fat, we should probably have total solids of about 11.5 per cent; whereas if we take a Guernsey or Jersey milk testing 6 per cent, we usually have about 16 per cent total solids. If we separate the fat from such milk we still have a milk heavy in solids, but if we take a 6 per cent milk and dilute it with skim milk we have a milk higher in solids than the original milk and of a kind of solids that taxes the digestive tract the most. To illustrate, if we should take two pounds of whole 6 per cent milk having a solid content of about 16 per cent and add say a half pound of skim milk, as is recommended by those advocating this method, we should then have a milk with total solids of about 16.2 per cent, but only 4.8 fat.

It is rather strange how the fat of the Channel Island breeds has been charged with making its milk less digestible for infants notwithstanding that if you consult the works of authorities on the home modification of cow's milk for infant feeding, invariably the directions begin something like this: "After standing on ice, etc., take off the upper part 'top milk' of a quart bottle of fresh cow's milk so much (depending on the age of the infant) adding milk sugar, filtered or boiled water, lime water, barley water, etc."

If we ask physicians why they do not use whole milk, they quite likely will say it is because the milk is "too rich." Ask them what they mean by "too rich," and the answer probably will be "too much fat," and still the ration just cited contains much more fat and less other solids than the original milk.

Notwithstanding that butterfat from a healthy cow and produced by cleanly methods is usually one of the most easily digested elements of food for infants, still it has been and is today accused of being the indigestible content of milk.

This is equally so with calf feeding. Some experienced calf-feeders ignore entirely the casein content of the milk in attempting to correct digestive troubles.

Recently I was called to see a valuable Guernsey calf about three weeks old that had been suffering from indigestion and constipation for about two weeks. He had received all kinds and combinations of oils, cathartics and skim milk and still was literally starving to death. When we diluted some whole milk with plain warm water and added some 20 per cent cream, increasing daily the amount of cream necessary to regulate the bowel movements, in five days the calf was quite bright and hungry and soon became fat, sleek and strong.

The remedy for the prevention of acute indigestion is rather simple and convenient, i. e., the removal of the calf from its dam in from twenty-four to forty-eight hours after birth and the dilution of the dam's milk with boiled water —one part of warm water to two parts of whole milk. This is an easy and satisfactory formula. In this way the customary number of pounds may be fed at each feeding. We are simply doing to the milk of high solids what nature does through the Holstein to the Holstein milk. There is still the proper proportion of solids but in greater dilution, and the only function yet ascribed to the water content of milk is that it acts as a dilutent and furnishes bulk, holding the other contents in solution and making them more digestible. It seems quite clear to all that the holding in solution of the solid content of the milk has its advantages since nature so arranged it, but some question the advantage of bulk. Such reasoning can be converted since experience has taught us that the bovine not only in early life but in adult life, thrives best when the concentrates are mixed, or diluted, so to speak, with large amounts of succulence and roughage.

By way of sealing the argument against dilution with skim milk, it is common knowledge that acute indigestion is more common among calves that are being fed liberally on skim milk than among those fed on whole milk and therefore the addition of skim milk to correct this trouble would be on the theory of similia similibus curantur, and if practiced in strictly homeopathic doses I fear the calf would soon decide that life was not worth living.

Plant Poisoning

L. H. Pammel, Dept. of Botany, Iowa State College

I have just read a most interesting and valuable contribution on "Plant Poisoning" by J. F. Craig and D. Kehoe* of the Royal Veterinary College, Dublin, Ireland. The authors have given a general summary of plant poisoning of livestock as it occurs in Great Britain and Ireland. In the introduction of this paper the authors say:

"Even taking such a limited field for survey, it is not possible within the limits of one paper to devote more than a cursory glance to some of the questions that attract attention.

"Fortunately more than this is not necessary, since there are in existence two publications of the highest value in relation to plant poisoning in these countries, viz., 'Veterinary Toxicology," by Dr. Lander, and 'Plants Poisonous to Live Stock,' by H. C. Long. From these we have quoted or extracted references and observations, and we would wish at once to make general acknowledgment of our indebtedness to both authors.

"Cornevin's 'Des Plantes Veneneuses' and Pammel's 'Poisonous Plants,' 'Veterinary Medicines' by Finlay Dunn, and Cushny's 'Pharmacology,' have also been drawn upon for information, and most of the original records of observations made in the British Isles have been consulted, the references given by Lander to articles previous to 1912 being here accepted as correct.

"In examining the evidence as to the toxic properties of plants it is apparent that our present knowledge relative to plant poisoning in the British Isles is based chiefly on clinical records of cases of accidental origin, and very little experimental work has been carried out to confirm the accuracy of these clinical records and observations."

Somewhere in Veterinary Medicine or in my Manual of Poisonous Plants, I made the statement that many of the so-called cases of poisoning are based on accidental cases, and about all the information we have are the clinical symptoms recorded by the observers, sometimes a veterinarian but more often a layman. These recorded symptoms are not always accurate. What we need is a large amount of experimental work to prove the toxic properties of plants. Experimenters in the United States will still find this a rich field for investigation.

* The Veterinary Record 5:795-825.

Some very notable work has been done in this country by Dr. Crawford and his associates of the United States Department of Agriculture.

Let us take a few specific cases. This year there has been much complaint about the poisoning from white snake root in the central northern Mississippi Valley, in some sections at least, because of the scarcity of forage. Possibly, also this year, because of the dry condition of the growth of these plants, some of the toxic principles have been developed. The authors say and I think they are correct:

"Since it appears, however, from various observations that plants may vary in toxicity in different localities, therefore, it does not seem justifiable to argue that because the poisonous nature of a plant has been proved in one country, that plant will be equally poisonous in another. Hence we strongly contend that further investigations are required in this country into the action of various plants to be referred to later, which are regarded as dangerous for livestock."

Whether in such cases soil or climate may be the factors, is not known. It is a well recognized fact that in the Rocky Mountain region there is much complaint about loco poisoning supposed to be caused by such plants as the stemless loco weed (Oxytropis Lamberti), or other species of this genus. Yet, while this plant is very common on the Missouri slope in the Missouri loess soil, in Iowa and Missouri, no case of loco poisoning has ever come to the writer's notice. In fact, while scores of persons have investigated the loco plants, our knowledge of the poisonous products in these plants and actual poisoning is far from complete.

The authors make the following classification of poisonous plants:

"1. In which the toxicity of the plant has been proved by observation, with or without experiment.

"2. A group in which the plant or its products has been suspected as poisonous, but where it appears to us that further evidence is required to definitely establish its toxicity. This would include various species of Ranunculus, Helleborus virdis, Delphinium, laburnum, privet, henbane, box, sorrel, Mercurialis species, cherry laurel, cuckoo pint, bryony, convolvulus, kalmis, devil's bit, equisetum.

"With regard to some species there has to be remarked the paucity of the literature giving records of cases of poisoning by them.

"We realize, however, that numbers of cases of plant poisoning may appear annually which may remain unrecorded, and we regret that more information is not available as to the annual losses from this cause.

"For the purpose of this paper it is most convenient to classify the poisonous species of plants according to the nature of their active principles so far as they have been ascertained, and upon which they depend for their actions, viz., (1) alkaloids; (2) glucosides; (3) phytotoxins.

"To these, however, has to be added a heterogenous group which may be noted as (4) Poisons not definitely classified or not classed within the above three groups.

"It is recognized that in certain plants the poisonous agent may not be the one actually present in the plant, but derived from some active principle present, examples of which are noted in the glucoside group, such as linseed and mustard."

Some other points brought out in the introduction are of sufficient interest to the readers of Veterinary Medicine to be quoted in full.

"Before commencing the consideration of individual species of plants, it is perhaps permissible to mention certain factors which appear to be concerned in the production of plant poisoning. These may be taken under two headings:

"a. The factors relating to the plants.

"b. The factors relating to the animals consuming the plants.

"a. 1. Variations as to the presence or quantity of toxic substances in plants may occur under different local soil and climatic conditions.

"2. Plants may be more poisonous at certain stages of their existence or under certain conditions, e. g., aconite, millet, green potatoes.

"3. The active principle may only produce symptoms when it has been acted upon by some ferment or in conjunction with some other factor, e. g., cyanogenetic glucoside of linseed, or soya bean meal extracted with trichlorethylene, or buckwheat Tribulus and red clover poisons requiring exposure to sunlight.

"4. Quantity and conditions under which ingestion occurs, i. e., symptoms may be set up by one feed (yew) or only by continuous feeding (bracken).

"b. Variations in susceptibility and reaction of animals to toxic substances may depend upon:

"1. Species, e. g., beechnut meal poisonous for horses but not for cattle (Wolff, Klimmer). Crotalaria dura poisoning produces lesions mainly in the lungs of horses, and in the liver

of cattle; want of pigmentation in the skin predisposes to buckwheat-rash and clover disease.

"2. Individual peculiarities, and conditions of the alimentary canal as to quantity and perhaps quality of contents.

"3. The nature of the toxic substance or substances, including under this head:

"a. The readiness with which the toxic substance may be absorbed by the alimentary mucous membrane, e. g., many saponins are not readily absorbed through the alimentary mucous membrane. Pigs may feed on cyclamen without serious results. The agrostemma sapotoxin, however, is readily absorbed.

"b. The effect of the toxic substance upon absorption, i. e., whether immediate, cumulative, or only clinically manifested after a 'latent-period,' meaning thereby that there is an interval between the discontinuance of ingestion and the appearance of symptoms.

"c. Its route of elimination, e. g., in the case of ricin, excretion through the intestinal mucous membrane may account for enteritis.

"It must be kept in mind that plants may contain more than one active principle and each of these principles may have a special action (e. g., yew and Adenia digitata alias Modecca digitata. Green and Andrews have recently found the root of the latter to contain a cyanogenetic glucoside associated with a ferment, in addition to a toxalbumin)."

Quite recently a correspondent asked whether bitter sweet (Solamun dulcumara), is poisonous. Since this plant is becoming more or less common in the West and is advancing to the East, the following facts in regard to this plant are of interest in this connection:

"Gilliam (1906) records a case of poisoning of sheep attributed to this plant. They had broken away into a cover where one was found dead and others ill.

"Symptoms observed were: Small intermittent pulse, temperature 104 degrees F., respirations hurried, pupils dilated, staggering walk, and green diarrhea. Postmortem examination result: Blood dark and tarry looking. Heart: ventricles firmly contracted.

"Some short pieces of the stem of S. Dulcamara were found in the ingesta in the rumen, together with skins and seeds of the berries.

"The three sick ones were given stimulants, and later in the day showed some excitement when given hypodermic injections of morphia. Two died the same night, and the other recovered after presenting semi-paralysis which passed off in the course of a week.

"Yates (1915) has attributed four cases of illness in cows (three recovering with treatment and one slaughtered) as due to the same plant, but does not record any definite evidence for this opinion.

"Edwards (1925) has attributed death of a five months old foal and a cow, to the plant on the discovery by analyst of solanin and solanidine in the stomach contents.

"As noted under 'potato poisoning,' the chief active principle of this plant is solanin. It also contains the glucoside dulcamarin."

Phytotoxins

The paper contains an interesting account of phytotoxins as follows:

"These are poisons distinct from alkaloids or glucosides, the principal being:

"Ricin, from the castor-oil bean (Ricinus communis); crotin, from the Croton-oil seed (Croton tiglium); abrin, from seeds of Abrus precatorius-Jequirity tree; robin, from leaves and bark of the locust (Robinia pseudacacio); curcin, from seeds of atropha curcus (Barbadoes purging nut).

"Green and Andrews have recently recorded the discovery of another, which they have named modeccin, found present in the root of Adenia digitata alias Modecca digitata, in association with a cyanogenetic glucoside and a ferment.

"Our reason for referring to them here is that occasional cases are met with in the British Isles of poisoning caused by imported castor or croton seeds, and the fact that Stockman has suggested that possibly the poison of bracken, as also that of soya bean meal extracted with trichlorethylene are of this class.

"The phytotoxins resemble proteins and have been classed as vegetable toxalbumins. Immunity can be obtained against them in experimental animals by subcutaneous injection or by feeding, i. e., they act as antigens (according to Ford and Abel a poison present in mushroom Amanita phaloides, which can also act as an antigen is a glucoside).

'Ricin when injected subcutaneously into small animals is one of the most powerful vegetable poisons known. In rabbits it has been found poisonous in a dose of one-thousandth of a milligram per kilo body weight, or according to Ehrlich, one gram is sufficient to kill one and a half million guinea pigs. Subcutaneously injected it causes at the seat of injection a local inflammation which may end in acute necrosis. General toxic symptoms appear only after an interval of at least several hours and death may

occur towards the 24th hour, or the animals may only show the symptoms after four or five days, and in either case die a short time later. Postmortem, the more important changes are, the presence of serous fluid or blood in the serous cavities, hemorrhagic enteritis, hemorrhages under the serous membranes, and hemorrhages may occur in various other organs, and there is also a swelling of the Peyer's patches of the intestine and of the lymphatic glands, with hemorrhages into the latter, and enlargement of the spleen.

"Histologically there have been noted foci of necrosis or degeneration of cells in liver, spleen, intestine, stomach and other organs, changes in the capillary endothelium and abundant widespread hemorrhagic extravasations.

"The severe inflammation of the intestinal mucous membrane is in all probability brought about by the elimination of the ricin through the intestinal mucosa. It is of interest to remark that ricin has a hemagglutinative action. It is said to be hemolytic only in relatively large doses. By action on it of pepsin plus hydrochloric acid. its agglutinating power can be destroyed although the toxic action remains unimpaired. If ricin be heated at 100 degrees centigrade for two hours it undergoes coagulation and loses its toxic power, and although now without harmful effect on the body cells, can still stimulate the production of antibodies. It is not destroyed by 50 degrees centigrade moist heat, and is said to withstand 110 degrees centigrade dry heat. Ehrlich showed that if animals be fed carefully with doses at first very small, and gradually increased, they gain immunity so that they eventually withstand at least 100 times the toxic dose with impunity. By using smaller doses given subcutaneously, an immunity so great can be set up that they will withstand 5,000 times the fatal dose. The fact that immunization can be produced through feeding suggests that the ricin is not wholly destroyed in the alimentary canal. A specific preciptin is formed in the body and is present in the blood serum of immunized animals, and the precipitin test can be used for detection of ricin in foodstuffs.

"The differences of the other phytotoxins from ricin are chiefly relative to the degree of toxicity and certain properties such as hemagglutinative action.

"In castor oil seeds ricin has been detected in the endosperm and the embryo, but not in the husk. Cases of poisoning in horses, cattle and pigs have been recorded in the British Isles, in which cases castor beans have been mixed with other foods or incorporated in cakes, and presumably the cause of the poisoning was the ricin.

"Lander has previously referred to the symptoms noted in the horse, in two cases recorded by Broad and Shenton respectively. More recently reported cases are those of Wooldridge and White.

"Wooldridge recorded an outbreak of poisoning in a stud of horses due to the mixture of castor seeds (Ricinus communis) with oats. The amount of castor seeds was not measured definitely, but out of a nose-bag of oats and chaff a small handful of castor seeds was picked out. Sixteen out of a total of 19 horses in the stud were ill.

"The illness commenced about fourteen hours after the first feed and in twenty-four hours all the horses refused their food. The symptoms showed consisted of a cramping abdominal pain, cringing as though to lie down but not actually doing so, the passage of hard feces thickly coated with mucus in some cases, the temperature varying from 101 degrees to 104 degrees F., rather pallid and watery mucous membranes, pulse variable, in most cases weak and imperceptible, arrhythmical and sometimes intermittent, and a tumultuous heart, and shallow and rapid respirations. Two days later the abdominal symptoms had abated, but muscular symptoms had developed in the form of tetanic spasms.

"The patients were somewhat excited on being approached, and muscular tremors were produced. Several horses were stiff and stilty in their gaits, their tails elevated and quivering; in one case trismus, and all animals showed difficulty in swallowing, and erection of penis in geldings or of clitoris in mares.

"The acute general spasms lasted about five minutes, and recurred every twenty or thirty minutes for three or four days.

"Three horses died, one in two days, another in six days, and a third in sixteen days after the first feed and all showed great weakness and lay down, dying without a struggle. Two further animals were lost later on. All the horses lost a lot of flesh and became very weak and most of them were unable to resume work for four or five weeks.

"The lesions found comprised a gastro-enteritis affecting the pylorus of the stomach and a variable portion of the intestine beginning at the duodenum and in proportion to the duration of the disease. The inflammation was

acute and in the two latter cases there was either diphtheresis or ulceration of the stomach. The lungs were congested and there was a small quantity of fluid in the pericardium. The ventricles of the heart were almost empty, while the auricles were distended. In one case there was evidence of a foreign-body pneumonia.

"The treatment consisted in giving stimulants such as sulphuric ether and strychnin subcutaneously to combat the cardiac changes and the use of an electuary containing ectr. belladonna vir., mag. carb. and bismuth carb. as antispasmodics and gastro-intestinal sedatives. Drenches were avoided. This was followed by a course of tonics."

Cowbane or Water Hemlock (Cicuta virosa)

The following account of poisoning from cowbane (Cicuta virosa) will be of interest. This plant is closely related to our North American cowbane Cicuta maculata, the most poisonous of our plants, at certain seasons of the year, autumn, winter, and early spring.

"Addison (1911) attributed to this plant the poisoning of cattle at Clones, Ireland, through eating the roots which had drifted to the side of a lake. The animals were lying on their right side, head extended and respirations very hurried. Froth had collected at the mouth and nostrils and there was tympanitis, which greatly increased before death. The limbs were extended, and alternately stiffened and relaxed. Some animals appeared to have died without a struggle. The postmortem did not reveal anything. There was no gastric irritation and there were no extravasations of blood (Lander).

"The active principle of the plant is not definitely known, but has been stated to be cicutoxin, a bitter, resinous substance, classed by Cushny in the picrotoxin group, and Long adds the alkaloid cicutine and oil of cicuta. The roots, Lander notes, contain no volatile alkaloid.

"Relative to poisoning by water dropwort and cowbane or water hemlock, it appears of interest to append the following extract from Cushny with reference to picrotoxin.

"Picrotoxin, he states, is the best known member of a group of convulsive poisons which closely resemble each other in action but of whose chemistry little is known beyond the fact that they are devoid of nitrogen. It is derived from the Anamirta paniculata (Anamirta cocculus, Menispermum cocculus) and is a neutral indifferent body. Other poisons resembling picrotoxin are cicutoxin derived from the Cicuta virosa, or water hemlock, and probably from other species of cicuta, (Our cicuta maculata and C. occidentalis L. H. P.) oenanthotoxin the acive principle of oenanthe crocata, water-dropwort or dead tongue.

"The symptoms which are often somewhat late in appearing are very similar in all classes of vertebrates.

"Having noted those observed in man, he states: Similar effects are noted in the lower mammals. After a preliminary stage in which twitching of the muscles and vomiting often occur, and in which the respiration is accelerated, while the pulse is slow, a violent emprosthotonic convulsion sets in, but soon changes to clonic movements; these may last some time, but eventually become weaker and give place to a condition of quiet and depression.

"The clonic convulsions of picrotoxin poisoning are altogether different from those of strychnin and other similar bodies, which produce prolonged tonic convulsions, and it was early surmised that the members of this series act on a different part of the central nervous system. In mammals the convulsions are less typical when the cerebral hemispheres are removed and disappear when the pons is destroyed, the chief effects arising from the cerbrum and midbrain. The stimulation of the medulla is seen in the acceleration of the respiration, in the slow pulse which is due to inhibitory action, in a very marked rise of blood pressure and in vomiting and salivation."

The symptoms are similar to those described, as being caused by our cowbane. The evidence of poisoning in the North American plant is partially equivalent to experimental evidence.

This copy of The Veterinary Record will be found a handy reference paper on poisonous plants.

Balsam of sulphur, made by heating one part of sublimed sulphur with four to nine parts of olive oil, enters into the composition of many evil-smelling proprietary preparations sold by animal medicine vendors.

Chloroform vapor has been used for inflating the mammary glands of cows infected with infectious abortion, and the results are encouraging.

The therapeutic action of adrenalin is complex. A recent report states that it requires over 16,000 cattle to furnish one pound of this substance.

Suggestions for a better Basis for Sterility Work*

H. E. Bemis, Iowa State College

The development of the pathology and treatment of sterility in animals came about through a necessity for the work and consequently as is true in many other cases, it was studied first from a clinical standpoint. While much progress has been made and much good has been accomplished through the use of such methods, we believe that we will never be on a proper basis for the work until an exhaustive study has been made of the anatomy and physiology of the genital tract followed by a careful study of the etiology and finally the pathology and treatment of diseases of the genital tract.

Our most noted clinicians have been Hess of Switzerland, who gave emphasis to the disease of the ovaries, Albrechtsen of Denmark, who gave particular attention to diseases of the uterus and cervix, and W. L. Williams, and many others in this country, who have combined these two methods and have studied much along the line of the pathology and treatment of these diseases. With the rapid growth of the dairy industry and the multiplication of cases of sterility a demand arose throughout the entire country for the diagnosis and treatment of these conditions. Practitioners naturally followed the lead, gained some idea of the general technic and launched forth on their quest for cervicitis, metritis, salpingitis and ovaritis; massaging, squeezing, dilating, irrigating, or painting every genital tract which was not functioning at the time, whether any definite reason could be found for doing so or not. I am not criticizing,—I plead guilty to the same practice and much good has been done, but is it not time to stop in our rush of treatment to consider some fundamental factors which may point the way to an understanding of many observed conditions hitherto not well understood?

Two years ago, work on the problem of sterility at Iowa State College was divided among four departments, namely, the Departments of Anatomy, Veterinary Investigation, Medicine and Surgery so that each department might work out the problems in its own field and finally the work of all might be correlated. Since that time each department has proceeded along its own line with respect to the problem and at the same time each is contributing something toward the solution of the problems of the other. The part of this paper which refers to the structure and function of the normal female genital tract of the cow is taken from the reports of the Department of Veterinary Anatomy. We feel that the work on the anatomy and physiology of the genital tract of the female of this species has brought out many points which are of great practical value to the clinician and which forms the only satisfactory basis for further work on this subject.

* Presented at the Veterinary Short Course, Iowa State College, and published in the Veterinary Practitioners' Bulletin, Vol. VII, No. 1, August 5, 1925.

Anatomy and Physiology

One or more Graafian follicles develop at each estrual period. They vary in size up to 1 to 2 cm. in diameter and may simulate a cyst in their full development. The time at which the follicle becomes palpable per rectum varies. In some cases we have recognized it as early as 13 days previous to heat but one palpating the ovary for the first time (I mean by this not having followed it through a series of daily palpations) would not recognize it earlier than three to four days previous to heat. The time of rupture of the follicle seems to vary from 48 to 72 hours after the appearance of the physical signs of heat. The discharge of the follicle is followed by the development of the corpus luteum of estrum which reaches recognizable size by the fourth or fifth day following estrum, and arrives at its maximum size at about the seventh or eighth day. At this time the average measurement is one and one-half to two cm. in diameter. From the eighteenth day on it slowly recedes, until it has practically disappeared to palpation by the time ovulation occurs. Therefore, it is apparent that there is a recognizable corpus luteum of estrum present in the ovaries during the greater part of estrum and for a few days there is both a recognizable follicle and corpus luteum. Ovulation may alternate from one ovary to the other so that as the corpus luteum recedes in one the follicle appears in the opposite ovary or one ovary may ovulate two or more times in succession.

According to Loeb there are two phases in the sexual cycle,—the first is dominated by the developing follicle and the second by the corpus luteum. Both act through substances given off

by them into the circulation. The corpus luteum during its functional activity antagonizes those mechanisms which lead to proestrus, estrus and ovulation. He classifies the function of the corpus luteum as follows:

1. To sensitize the uterus to develop the placentomata.

2. To facilitate implantation and development of the embryo.

3. To call forth growth of the mammary gland.

4. To regulate the sexual cycle.

From these statements it is evident that these two forms of ovarian bodies which are distinctly recognizable by rectal examination represent normal functions which should not be interfered with when the cycle is normal and indicates that the period of the estrous cycle should be known by the examiner in order that he may take these factors into account.

Regarding the uterus, our colleagues report that the mucous membrane is of a simple columnar type, nonciliated and that the mucosa possesses no mucous glands except near the cervix. The connective tissue of the body and horns of the uterus is essentially embryonic. The first zone being fibroblasts embedded in a semifluid intercellular substance. The second zone spindle to stellate connective tissue cells of embryonic type. The third zone is essentially the same until after puberty and pregnancy when it gradually assumes a fibrous character. The embryonic character is apparent on the gross specimen which is gelatinous, very much like the umbilical cord of the new born. Under the cotyledons there is a remarkable vascular zone between the first and second zone as described above. One cannot stop to consider these facts without appreciating the delicacy of the epithelium and even the structure of the wall and realizing the ease with which infection may be introduced within the tissues and even be carried to the general circulation. It explains why removal of the fetal membranes by force or breaks in the mucous membrane caused by instruments may be followed by abscesses in the wall or meteritis, peritonitis or septicemia.

The size and folding of the cervix seems not to be well understood by many veterinarians. In the cow this structure is from three to four inches in length and the walls are practically one inch in thickness. The state of contraction of the muscles is such that the canal is practically obliterated and is obstructed, by three to four transverse folds which project into the canal from the walls in such a way that direct passage through the canal is not possible when the structure is normal. The mucous membrane lining the cervical canal is rich in mucous secreting cells which is the source of the chief mucous discharge in case of estrum or in case of inflammation.

Viewed from the vagina the external os projects into the vagina and presents one to one and one-half or two concentric rings according to the period in the cycle. It increases in number of folds presented to view and relaxes during estrum. It is surrounded by, and often times is enclosed within, the anterior sphincter of the vagina which forms a complete circle in the anterior wall of the vagina. From this point backward the fall of the vagina presents no important features until we reach the posterior sphincter at the point of communication of the vestibule with the vagina. This sphincter is usually in a state of contraction and must be dilated before entrance into the vagina can be made. When passing a speculum into the vagina it will come in contact with an obstruction at a depth of three to four inches. This is the posterior sphincter. After a few seconds of steady pressure the sphincter will relax and the speculum is then free to enter the cavity of the vagina and pass to the cervix.

We believe that the posterior sphincter has often been mistaken for the cervix and that treatment has been applied to the vagina when the operator supposed the treatment was being applied to the uterus. If this is not a fact we are at a loss to know what some operators are doing when they report opening a cervix in a few minutes with some straight instrument or placing a capsule through it into the uterus when the cervix is in its normal state of contraction. Again, from the observations of Dr. H. S. Murphey and his associates on the changes occurring in the genital tract of cows and sows during the estrus cycle, we feel that some phenomena hitherto described as being pathological are merely physiological. According to their description, and I think it is the generally accepted one, the estrus cycle is divided into diestrum, or the inter-period and estrum. The latter being subdivided into proestrum, estrum proper, and postestrum. Cellular and circulatory changes in the vestibule, vagina and cervix show a periodicity which keeps pace with the stages of the cycle. Beginning with the middle of diestrum, the cells of the mucous membrane are the fewest in number and the lowest in type.

There are few leucocytes and no edema or congestion of the mucosa which reaches its height 24 hours after the beginning of heat manifestations. About the eighteenth day there is a beginning desquamation which with the leucocytes and secretion constitutes the discharge. Desquamation is complete by the end of 24 hours after the appearance of heat. "On the twentieth day lymph flows from the mucosa through spaces in the epithelium. From the nineteenth day of one period to the third day of the next, the leucocytic migration and infiltration is very heavy and then passes rapidly into a quiescent state. Congestion and edema are also marked."

In the cervix practically the same process takes place. The loading of the cells and the vessels adds to the thickness and consequently deepens the folds and prolapses the folds of the mucous membrane into the vagina. We believe that the observation of these changes is not only a very important indication of the stage of the estrus cycle which helps to solve the problem of pregnancy or non-pregnancy and tells us whether the corresponding stage of the ovaries is normal or abnormal, but that if not taken into account the congestion and edema may be mistaken for inflammation and the flocculent mucus for pus discharge. Furthermore, if all these changes are constantly occurring in a rythmical manner with the changes in the ovary, what happens when we upset the ovarian cycle by expulsion of the corpus luteum when the cycle has been running regularly as it does in many cases of sterility?

Inter-relation of Other Structures

For thousands, perhaps millions of years, the genital tract has undergone an evolution of form and structure not only within itself but in its inter-relation with the endocrine glands of the body, until in the native state it functions most naturally only at certain seasons of the year and once each year when the glands of internal secretions are the most active and the conditions for exercise and proper food elements are the best. The importance of these factors has been emphasized many times in our lectures and in our practice, but are we yet taking proper account of all these factors when we make our analysis of each and every case of sterility? I am speaking particularly of those obscure cases of sterility where there is no definite pathological condition which is clinically demonstrable. There are many cases which demand more general treatment than that usually given to the genital apparatus.

Let me report one case to illustrate the point. A purebred Guernsey heifer had been bred nearly a year previously. Thereafter she never showed symptoms of heat and was supposedly pregnant. At the end of nine months parturition did not take place and an examination was requested. Her general condition revealed nothing strikingly irregular except two hairless patches, one about 12 inches in diameter on the right shoulder and the other about 4 inches in diameter on the left mandible. The uterus was found to be carried forward by some content. No fetus could be palpated; there was no pus discharge and the walls of the uterus were not thick and stiff as they are in pyometra. The right ovary contained a corpus luteum which after due consideration was removed. The uterus emptied itself in a few days of a lymph-like fluid and the cow came in heat on the sixth day. The uterus remained placid and somewhat enlarged. The cow was bred at subsequent heat periods without success. It was observed that she put on fat rather excessively and in patches. The hairless areas persisted and even enlarged. The eyes seemed unusually prominent and the thyroid glands enlarged. Suspecting some thyroid disturbance we administered one-half ounce of tincture of iodin daily for ten days which produced iodism. Within a month after this treatment the hair grew in again over the hairless areas and afforded our best evidence that the iodin had had some effect. She was bred again May 12, 1924, and this time conceived and carried the calf successfully through to parturition.

Conclusions can not be drawn from one case but this would seem to be a case where the cause of sterility was not due to infection and perhaps was not located in the genital apparatus proper. Other cases which seem to fall in similar groups are being found constantly in our practice. In some there seems to be complete lack of ovarian function, in others excessive ovarian function, in still others, lack of tone in the uterus. The clinical cases are being treated as indicated with follicular fluid, or corpus luteum extract prepared by the Anatomy Department and furnished for clinical use. Some apparent results are being obtained. Our anatomists are also making a detailed study of all the glands of internal secretion on our hopeless cases which have been condemned and slaughtered. We are hoping that such studies will give us a better understanding of the physiology of reproduction and may lead to some more rational treatment of obscure cases of sterility.

Influence of Food Elements

The methods used by Evans and Bishop have been a source of help to me in making an analy-

sis of sterility. "Inability to bear young, the condition broadly and simply designated as sterility or infertility, may be due to disturbance of any one of several members of the chain of events involved in mammalian reproduction. Disturbances in insemination, in ovulation, in germ cell vigor, implantation, normal placental function or in parturition have each to be considered before we are at liberty to assign sterility to instances of breakdown in any one of the links in this rather complex chain. Any scientific study of fertility must attempt to segregate these factors in the physiology of the reproductive process for upon our ability to make such a separation may depend the recognition of separate physiological relationships or needs, for instance, of the ovarian and of the uterine mechanism. The cause of breakdown of these two mechanisms is not identical." They have found the existence of a hitherto unknown dietary factor essential to reproduction. Animals fed on a basic standard ration of fat, carbohydrate and protein plus appropriate salt mixture and vitamins A and B and which are normal in growth, vigor, estrus and ovulation, yet do not produce young until fed other foods like lettuce, whole wheat, the cereals, egg yolk, etc., which contains an unknown factor called "X." Fertility is restored almost immediately in rats by the feeding of such elements. In studying the causes for such sterility it was found that implantation had occurred but that the fetuses had later been resorbed. The authors admit the possibility of a weakened germ cell but are inclined to think that the best explanation is in the lack of proper uterine function.

Does not this data throw some light on the cause of many cases of temporary sterility in which we fail to find any recognizable pathology and in which if the animal be taken out of service for a period until a more natural breeding season of the year when the factor "X" may be supplied through green pastures or artificially, will then conceive without any other treatment? May it not explain also at least some of our cases of death and abortion of the fetus or its retention followed by either maceration or mummification? We have all had experience with the isolated cases and perhaps have not attempted to offer any explanation but have simply treated the condition which resulted. In two herds reported by Dr. Covault quite a large percentage of abortion has occurred during the dry season of the year. Agglutination tests for infectious abortion were negative. What is the explanation for these observed facts? Likewise we have all had experience with cows which seem regular in heat, accept service, pass over one or more periods as if pregnant and then come in heat and repeat the process. Is it possible that these cases may conceive each time but through lack of proper uterine function, abortion takes place at an early period?

The effect of food elements upon fertility is receiving considerable attention at the present time. It is possibly over-emphasized by some and is regarded as being of little importance by others. In the light of results of these experiments on laboratory animals, it seems to me it behooves us to carry the experiment into practice and to study very carefully into the analysis of the ration of cows and bulls which fail to breed even though they seem clinically to be normal in structure and function.

Herd Management

Herd management is often the keynote to herd efficiency. A number of excellent articles have been written on this subject and I think in a general way there has been a great improvement in the handling of established herds, but I feel that there is still need for all of us to constantly preach the gospel of better herd management. This should not be limited to the care of those animals already affected with some form of genital disease, or even to the prevention of infection from the time of birth until the end of the reproductive period of both male and female, but should include consideration of the feeding, housing, exercise, hereditary factors, seasonal factors, influences of heavy and prolonged production, etc.

Dr. Isaacson, who recently visited this country and who is making a special study of the problems of nutrition, stated that in England considerable progress is being made in reducing sterility in the Shorthorns by reducing the amount of flesh carried. We have felt for some time that to keep the breeding herd in show condition is one of the greatest mistakes of the breeder. The dairy breeders are realizing the harmful effect of delayed breeding and prolonged heavy feeding necessitated in the 365-day test. The Guernsey Association now has a test which requires a cow to carry a calf 205 days of the test; the Jersey Association has a test requiring the cow to carry a calf 180 days of the test, and has another test which requires that the cow must produce a calf within 14 months from the date of the birth of the last calf preceding the test. This requirement that a cow must be a regular breeder in addition to her milk production performance, is one of the

most encouraging indications. An understanding of all these problems is essential to the best analysis of the many causes of sterility and must go hand in hand with our knowledge of the pathology and treatment of the conditions caused by infection.

Methods of Examination and Treatment

And now what are we to say about the pathological conditions and their treatment, cysts, retained corpora lutea, salpingitis, metritis, cervicitis, and vaginitis? We have the standard text of W. L. Williams on "The Diseases of the Genital Organs of the Domestic Animals," many articles in current literature, and bulletins from various experiment stations both state and national. It seems scarcely necessary for me to enter into a detailed discussion of each of these problems at this time, but following my appeal for a better basis for diagnosis, I wish to add an appeal for more careful and thoughtful treatment.

In analyzing the situation in any herd for the first time we must be armed with the breeding history of the herd and follow this with the specific history of each animal and a detailed examination of every part of the genital tract. This latter must be done in such a way as to avoid carrying infection from the exterior to the parts being examined and from one animal to another. It necessitates the sterilization of instruments and the thorough preparation of the hands, perineum and external genitals. It is our practice to provide oneself with two clean buckets of warm antiseptic solution (therapogen 2% to 3%). One to be used in the preparation of the field and the final preparation for entering the vagina or uterus. Rectal examinations are done with the gloved right hand lubricated with non-irritating soap or concoction of slippery elm while vaginal examinations are done with the gloved or bare left hand. Thus the left hand is saved from the unusual contamination coming from rectal examinations.

Entrance into the rectum should be made slowly with the hand and arm well lubricated, giving time for the sphincters to relax rather than forcing entrance. The rectum should be freed of feces and the hand carried forward into the terminal portion of the colon where the wall is thinner and the attachment longer. In some individuals the contraction of the circular muscle is strong. It is especially important in these animals to keep the fingers extended as much as possible to reduce the diameter of the hand because the muscular contraction around a larger object may be sufficient to split the mucous membrane and allow infection to enter into the wall of the intestine resulting in abscess in the wall and adhesions of the rectum to surrounding structures or to stricture of the intestine.

A rectal examination carefully made should reveal the form, size, freedom and structures of the ovaries in cases where they are within reach; enlargements of the tubes or adhesions of the tubes to the ovaries or uterus or to the mesosalpinx; the size, position and consistency of the uterus, and a general idea of the size of the cervix. It is also useful in breaking cysts or expelling corpora lutea and in carrying out massage of the entire tract. To pick up the ovaries with the least danger of injury to the rectum, have the finger nails trimmed short and protected by a rubber glove, use the fleshy part of the fingers keeping the first joint extended as much as possible and accomplish the grasping motion by flexion at the knuckles.

After the ovary is between the fingers and thumb or entirely within the hand a great deal of pressure can be exerted without injury to the mucous membrane so long as the ends of the fingers are not brought into a grabbing or scratching position. For purposes of description and comparison of the progress of cases from time to time we find it convenient to measure the width of the first three fingers, then as the ovary is held between the thumb and fingers, one can judge whether it is one or two or two and a half fingers width in length or thickness and can express it immediately in centimeters which is much more accurate and understandable than to attempt to compare it to some object which is not constant in size.

The tubes are best palpated by holding the corresponding ovary between the thumb and first finger and stretching up the mesosalpinx, passing the middle and third finger over the ovary into the bursa ovarii to determine its freedom from adhesions. Any enlargement of the tube can be detected by tracing its course with the middle finger. If enlargements can be detected it is pretty good evidence that the tube is diseased as a normal tube is difficult to trace definitely.

After making a rectal examination always wash the hands outside the buckets. The vagina is invariably examined with the use of the glass speculum, a cylindrical tube eighteen inches long and one and one-quarter inches in diameter. By the aid of an ordinary flash light or special diagnostic light the walls of the vagina and the external os can be seen in their normal position and colors. This obviates the necessity

of entering the vagina with the hand in many, many cases.

If the vagina is first examined with the hand and after some manipulation the forceps are placed on the cervix which is then retracted the tissues by that time are so irritated and the circulation to them is so much interfered with that any vagina and cervix is apt to look badly inflamed when as a matter of fact it may have been entirely normal before the examination was started. In addition to the benefits which are obvious from this method, we believe that the lessened vaginal and cervical irritation is important in preventing upset of the estrus cycle. We have observed that cows which had been regular in their cycle often become irregular after repeated vaginal and cervical stimulation. This observation is also leading us to treat only very definite pathological conditions in the vagina and these at less frequent intervals, leaving the lesser inflammations to the hand of time. For the same reason we avoid the use of the forceps for fixation of the cervix whenever possible and when absolutely necessary to use forceps, we prefer the Hopper forceps to the Williams type because of the lessened amount of tissue injury.

The method of dilating the cervix still seems to be little understood by many. Unless the cervix is diseased and relaxed as a consequence, the canal through it is never large or straight enough to allow the passage of an instrument through it without injury until it has first been dilated. To accomplish this it should first be fixed with one or two forceps placed upon the projecting folds of the external os and retracted. Then place the dilator into the canal to the depth of the first transverse fold and carefully but forcibly stretch the tissues until the circular muscles are tired out and the fold is lifted. By closing the dilator and rotating it carefully it finds its way under the fold and along the canal to the second fold, etc. Three and sometimes four such folds must be lifted before the instrument will pass freely into the uterus, and can then be followed by a small catheter. The avoidance of injury to the uterine mucosa by the careful use of catheters, is of equal importance. Many times one finds abscesses and adhesions in the region of the ovaries, tubes, uterus, or cervix as a result of injury in treatment. Painting the surface of a dilated cervical canal with Lugol's solution of iodin should be preceded by swabbing the surface a number of times with dry gauze or cotton to rid it of the abundant mucus which flows over its surface and tends to prevent contact of the solution with the tissue itself. Before applying the swab, have all excess of fluid wrung out of it and lay a pack of gauze or cotton under the cervix to prevent any contact of the Lugol's solution with the vaginal mucous membrane.

Cervical surgery offers an interesting field. W. L. and W. W. Williams describe a very complete and interesting technic for amputation of hypertrophied folds. They think it is essential to preserve the mucous membrane in order to preserve the function of transmitting the spermatozoa from the vagina to the uterus. Our operations have been limited to the direct amputation of over-hanging and obstructing folds and we intend to follow this operation further as opportunity presents.

My object in presenting this paper is to impress the need for a more careful consideration of the structure and the function of the female genital tract and to suggest some factors aside from infection which are known to influence its functioning in order that we may get a broader view of the problem of sterility, and finally to make an appeal for more careful technic and more time for nature to do her part in repair. Too early return to service is apt to be not only unsuccessful but the inflammation is often thereby actually increased.

When turkeys are reared in the same manner as other fowls, serious difficulties and even failure often occur. This has led to the belief that the turkey, by nature, is not well suited to the restrictions of domestication and that it requires a management conforming as nearly as possible to the wild state in order to thrive. However, there is much evidence that there is nothing in the nature of the turkey which unsuits it to domestication. It is well known to those who have reared turkeys by means of artificial brooding that they become tamer than any of the other domestic birds and do well under proper conditions of sanitation. The relation of disease to failures has not been generally understood. It is evident now that many of the difficulties have been due to disease. The disease which in general is of greatest importance—infectious entero-hepatitis or blackhead—has been studied and the progress made in the control offers opportunities for overcoming former difficulties. Furthermore, the measures which have been worked out for the control of blackhead are also, fortunately, the most effective means known for controlling other infectious diseases of turkeys.—H. W. Graybill, Univ. of California.

Value of Bone Meal in Certain Diseases of Cattle*

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This short note is written in the hope that the veterinary profession will give a trial to bone meal by administering it to young growing cattle in whom development becomes stunted, to those cattle which get a plentiful supply of food but become emaciated, to those licking earth freely, and to those known to suffer or supposed to be suffering from parasitic gastritis, and also to other cases of emaciation from obscure causes.

The following is the history of the young animals whose growth was stunted, and of the emaciated cattle that were successfully treated by bone meal.

A cattle farm has been maintained at the Central Mental Hospital, Federated Malay States, since the latter part of the year 1913, with the object of obtaining a regular supply of good milk for the inmates and also for obtaining manure for vegetable cultivation. They are liberally fed on grass grown on the farm, and are given a ration of conjee made up of broken rice and rice bran, with an addition of a small quantity of salt and oil cake. They are kept in well ventilated, clean stalls, having concrete flooring, and are looked after well. They were growing there splendidly until about June, 1922. At this period there were sixty-seven head of cattle (calves not included), and a few of them seemed running down in condition. Tonic powders made up of ferri sulph., nux vomica, and gentian were administered without benefit. Gradually the number of emaciated cattle increased, the young did not seem to grow normally, and non-contagious abortions, retention of placenta, and unusually high mortality among calves became of frequent occurrence. Later, they freely indulged in licking earth, had poor appetities, appeared dull and used to grind the teeth. Examination of blood for parasites proved negative. However, liq. arsenicalis was given a trial, and as it yielded improvement in appetite and condition it was administered for over two months, but again the old trouble started among the treated animals, and therefore it was discontinued. At this stage it was thought advisable to destroy some more advanced cases in an endeavor to ascertain the cause on postmortem examination. Five such cases were destroyed, and on postmortem examination the only important finding was parasitic gastritis of advanced type and a large quantity of sand present in the abomasum. Owing to this finding, Cu. So4 in solution was administered to the remaining emaciated cattle. This treatment proved much more promising than arsenic treatment, but the improvement was of short duration only as the treated cattle again began to lose condition rapidly. The whole situation became of an alarming nature as, from June, 1922, up to the end of October, 1924, no less than twenty-three young adult cattle died, and five hopeless animals were destroyed for investigation. It was believed that nothing further could be done to save the situation. At this critical juncture the G. V. S., Perak North, Captain G. Moir, O. B. E., F. R. C. V. S., happened to receive a pamphlet entitled, "Phosphorus in the Live Stock Industry," reprinted from the Journal of the Department of Agriculture, May, 1924, and after its perusal thought to give a trial to bone meal, and so three ounces of bone meal mixed with a pint of conjee were drenched to each animal daily. Twenty-seven head of cattle were thus treated. Under this treatment they began to show improvement rapidly, and within less than three months they put on flesh, the grinding of teeth and habit of licking earth disappeared, and their appetite became normal. They now appear to be in the best of health and condition.

Concluding remarks:

(1) No death has occurred from the commencement of the experiment of the administration of bone meal until the present date.

(2) It will be seen from the above that, as a matter of fact, the trouble was not due to infestation with Haemonchus contortus, as the Cu. So4 treatment was a total failure, whereas bone meal alone brought on the improvement. It is obvious that chronic parasitic gastritis became prominent owing to impaired health of the cattle.

(3) As bone meal alone proved successful where treatment with drugs failed, there is strong reason to believe that the grass grown on the farm during recent years was highly deficient in phosphorus content, obviously from deterioration of the soil by age and lack of treatment by suitable manures. Unfortunately, an-

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alysis of the soil and fodder was not undertaken owing to lack of facilities, and therefore a definite statement of any sort cannot be made. However, judging from the results obtained, there does not seem any reason to doubt the above conclusions.

(4) From the results obtained it can be easily understood that in suitably nourished animals the harm that may be caused by parasites in debilitated and ill-nourished animals is reduced to a minimum.

(5) It must be again emphasized that proper animal nutrition is indisputably one of the chief factors in the prevention of disease.

(6) Bone meal supersedes other phosphorus preparations owing to its power of easy assimilation, its cheap price, by being easily obtainable, and by being non-toxic.

(7) Bone meal has been experimentally found to be most economical for fattening cattle for beef, as, by its regular administration, the assimilation of food is greatly increased and thus a better value for the food given is obtained.

(8) It is most important to remember that bone meal should be procured from a reliable source and must have been sterilized, as recently from the use of Indian bone meal as a farm fertilizer, the deaths of two horses from lung-anthrax were caused in Scotland.

The Unification of Milk Control in the United States*

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Milk control in the United States is now in a chaotic, non-uniform state. There can be no doubt that there is at present very little evidence of a singleness of method on the part of health officers in the solution of the milk sanitation problem. The great diversity of method is closely reflected in the differences in legislation. A scrutiny of the ordinances now in force discloses both differences in type and in detail.

The types of legislation now in use include:

1. Ordinances which require all milk to be pasteurized, but which do not make any specifications as to the quality of milk to be pasteurized.

2. Ordinances which specify the kind of milk which is to be pasteurized and the temperature and holding time of pasteurization, but which fail to specify the equipment and operation details of the pasteurization plant itself.

3. Ordinances which do not even mention pasteurization.

4. Ordinances which permit the sale of one grade of raw milk and one grade of pasteurized milk and which have high minimum standards for each of these two grades, but which it is found impossible to enforce because of the resultant danger of a milk shortage.

5. Ordinances which permit the sale of one grade of raw milk and one grade of pasteurized milk, and which prescribe relatively low minimum standards in order to admit the major portion of the milk supply, but which fail to provide for official recognition of the dairy which wishes to market milk above these low minimum standards.

6. Ordinances which provide for several grades each of pasteurized milk and raw milk.

As to the detailed requirements:

1. There is a great variety of bacterial limits for the highest grade of milk legally recognized, such as: 10,000, 20,000, 30,000, 50,000, 60,000, 100,000, 200,000, 1,000,000.

2. There is a great variety of temperature requirements at the dairy farm, such as: 45, 50, 55, 60, 65, 70, 75 degrees F., and many ordinances with no requirement whatever.

3. There is much variation in sterilization requirements at the farm. Some ordinances permit only steam sterilization. Some permit hot water but not chemicals. Some permit chemicals. Some make no requirements.

4. There is a great variety of requirements as to the health of employes. Some ordinances make no requirement; some require that the employes be free from communicable disease, but specify no examination; some require physical examination but include no laboratory test; some include laboratory tests but do not include examinations for the typhoid carrier status.

5. There is a great diversity of requirement as to type of barn and milk room floor, distance of the milk room from the barn, lighting, air space, etc.

6. Some ordinances require tuberculin test-

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ing of all cows, some for certain grades of milk only.

7. Some ordinances require a pasteurization temperature of 140, some 142, some 143, some 145 degrees F.

8. Some ordinances require a holding time of 20 minutes, and some of 30 minutes.

This detail is given so that one may be left with no doubt as to the truth of the statement that there is little unity of thought in the present status of milk control.

This has resulted in a low "sanitation morale" on the part of the dairy industry. It is easy to understand that such a lack of agreement among health officers causes the dairy industry to distrust the health officers' knowledge in matters of milk sanitation. The dairymen, who move about the country more than is generally believed, discuss these great variations in practice and naturally come to feel that among so many different practices some must be wrong for they cannot all be sound. Therefore, it must be that the knowledge of many health officers in matters of milk sanitation is unsound and that possibly the milk ordinance written by their own health officer and by means of which he is attempting to force them to comply with certain disputed requirements, is not based upon sound reasoning.

Hence, we should not feel too harshly toward the dairy industry if as a result of this state of affairs a spirit of resistance to milk ordinances has developed. Many a health officer distractedly wonders why his milk sanitation problem is one of his most vexing ones, why he is constantly beset with violations, court cases, and all too frequently unfavorable court decisions. Occasionally, of course, it is his personality or the personality of his inspector which is at fault, but fundamentally in most cases it is believed that the fault lies in this feeling on the part of dairymen that the man who is officially in a position to dictate their methods is not qualified to do so either by his knowledge or by his experience, that his requirements are not the requirements dictated by group judgment, but are requirements conceived by himself personally and vastly different from many other requirements on the same subject by other health officers.

It must be admitted then that the "law obedience morale" of the dairy industry is low in many cities and that the fault lies not entirely with the industry.

This lack of unity of thought in matters of milk control has also resulted in a lack of confidence in milk quality on the part of the milk consumer. The most intelligent milk consumer does not always trust the general market milk in his city. Even though he sees reports in the press that the health officer is forcing the dairy industry to obey the local milk ordinance, he consults his pediatrician and is only too often advised that the general milk supply permitted to be sold by the health officer is not a proper or safe infant food and that he should purchase a "certified" milk, the production of which is usually not controlled by the health department at all but by an outside group of physicians known as the "Medical Milk Commission." In other words, this means that the physician has not trusted the health officer's control of the milk supply problem but has instead set up his own separate control board in order to foster special parts of the supply which he can feel safe in approving.

Why has the pediatrician come to distrust the health officer's control of milk supply in so many cases? It seems reasonable to believe that the pediatrician has followed somewhat the same reasoning as has the dairyman.

So we have a situation in which the health officer commands the respect of neither the producer on the one hand nor the consumer on the other. No situation could be better calculated to retard high grade milk production and adequate milk consumption.

It would seem that the wisest solution of this vexing problem would be for health officers to adopt as standard some one effective type of milk legislation and control. If instead of the present situation it were true that the majority of cities in the United States were following some one effective standard ordinance and some one method, it is believed that the dairy industry would soon regain its respect for the health officer and that the confidence of the pediatrician and the general consumer would then be justified and soon awakened. Is this possible? Surely what we have learned about milk sanitation can be embodied in some one ordinance, and surely most of us can then agree upon this ordinance and act in a concerted manner which will invite success.

Tendencies toward agreement among health officers have been observed during the past ten years. Certain states have adopted "model" ordinances. That it is possible to bring about agreement among health officers is foreshadowed by certain tendencies during the past ten years. Within that time a number of states have adopted "model" or "standard" ordinances and many of their cities have enacted these instruments into law. Much good has thus been

accomplished in local state areas. In some states many cities which previously were exercising little or no control of their milk sanitation problem have, through the impetus of such a state model ordinance, achieved a high degree of milk sanitation.

However, unless the milk control thought of the states of the country is unified just as several of them have unified the milk control thought of their cities, we shall merely have advanced from a condition of chaos among city ordinances to a condition of chaos among state standards. It would be unfortunate to permit the growing practice of different state standard ordinances to become set and difficult to unravel. It would seem undeniable that now, when the tendency is just beginning, is the time to mature the plan of a state standard into the better plan of a national standard.

A tendency to unify state standard ordinances has been apparent during the past two years. Prior to 1923 no two states had the same standard ordinances or were following any one statewide milk control program. Since 1923, nine different states have adopted one standard milk ordinance and one state-wide milk control plan recommended by the United States Public Health Service. These states are now encouraging the passage of the ordinance by their cities and within the short time of two years 64 cities have enacted the one ordinance into law.

There is apparent, then, a tendency toward one state standard. Another step forward, which may possibly lead to the adoption of one federal standard, is the action last June of the Conference of State Health Officers with the Surgeon General of the United States Public Health Service in creating a committee to consider the possibility of reaching a common ground in the matter of milk control in the several states.

It is obvious, however, that no standard should be adopted which would be so inflexible as to retard progress. Any national standard ordinance which is adopted should be a progressive one and subject to change, after mature and joint deliberation by the various states. For this reason, it was suggested at the Conference of State and Territorial Health Officers in June last year that the conference devote part of its attention to a consideration of any modification of the Standard Ordinance which might have been proposed since the previous year, and that to these conferences there should be invited representatives of the Dairy Division of the U. S. Department of Agriculture, representatives of the dairy divisions of the various state colleges of agriculture, and representatives of the various national dairy associations, such as the National Dairy Council and the International Milk Dealers' Association.

Such a broad handling of the problem should result in a feeling of fellowship between the health authorities, the Department of Agriculture authorities, the various agricultural colleges, and the dairy industry. Such a plan will also secure for itself the maximum assurance of theoretical soundness and practical workability.

In closing, it is believed that the adoption of some such plan of unification as is outlined above would have the following advantages:

1. Milk legislation will have greater legal strength and dignity. The ordinance will then not be discounted as an invention of the local health officer but will instead be respected as a common practice in cities in general.

2. Dairymen will obey milk legislation more willingly and the difficulties of enforcement will be lessened.

3. Consumers will have greater confidence in milk quality and will drink more milk.

4. The average quality of milk will be improved. A standard ordinance upon which the majority of health officers agree will tend to give results superior to the present confused state of legislation.—American Journal of Public Health.

Insulin, Dr. F. G. Banting's world famous remedy for diabetes, the discovery of which won him a Nobel Prize, may be superseded within a few years in all but the most serious cases of the disease. Another Canadian research worker, Dr. J. M. Rabinowitch, has prepared a substitute for it, which has the great advantage that it can be taken by the mouth. Insulin is administered by injections. The substance which has been prepared by Dr. Rabinowitch is a sweet syrup, analogous to sugar, which is obtained from glycerin on which a certain bacterium has been allowed to act. It is known as dioxyacetone. Dr. Rabinowitch, assisted by Miss A. B. Frith and Miss E. V. Bazin, gave dioxyacetone by the mouth to sufferers from diabetes in the Montreal General Hospital. It was found to lower the blood sugar. It is expected to act as an efficient substitute for insulin in the future in most cases of diabetes where the disease has not advanced too far. Dr. Rabinowitch is at present preparing a detailed record of the cases in which dioxyacetone has been used.—Science.

The Diagnosis of Internal Parasites of Domestic Animals*

E. A. Benbrook, Iowa State College

Prevention and treatment of internal parasitic infestation depends upon a determination of the types or species of parasites present. This may be accomplished by a number of methods as follows:

1. Gross examination of body discharges such as feces or vomitus may reveal complete parasites, or fragments, or, as in tapeworm infestation, mature segments.

2. Carefully conducted autopsy technic will reveal the presence of gross parasites or the gross lesions produced by those parasites that are microscopic in size. If a dead animal is not available it is advisable to destroy one of the affected members of the herd or flock; particularly in the case of pigs and poultry. Of course it may not be advisable or possible to destroy animals from a valuable herd, or to destroy certain individuals because of their value. To avoid overlooking small parasites, especially the thin-bodied nematodes, it is necessary to examine tissues and material in a strong light. Direct sunlight will be found very effective in examining the mucous surface of the stomach or intestine, particularly of sheep and cattle, where tiny nematodes may be seen actively moving about and reflecting points of light.

3. The more common and important parasites of the digestive tract may be diagnosed in the living animal by using a microscope to detect eggs in the feces. This method is useful in the case of valuable animals; in large animals in the early stages of infestations; in mild infestations; as a routine measure in small animal practice; and to some extent in diagnosing external parasitism. The latter item is of interest because it has been noticed that dogs and cats affected with mange may ingest mange mites by biting their skin, and even in early cases the mites may be isolated from the feces; having passed through the digestive canal intact.

The fertility of the worms that invade the gastro-intestinal tract in most cases is enormous, each female worm producing ova sometimes numbering thousands of millions. Furthermore the ova of the various species, or at least certain groups, have features of size, shape, color or structure that serve to differentiate them.

The Methods Employed

The simplest method of preparing feces for microscopic examination consists in mixing enough material in a drop of water or physiologic sodium chlorid solution (0.85%) to make the fluid moderately cloudy. A cover glass is then dropped in place and examination made with the microscope. Cover glasses may be dispensed with, but they aid in keeping the material from moving about and in protecting the objective of the microscope from coming in contact with the preparation. Also, before applying a coverglass, it is best to push aside coarse particles with a needle or to pass the feces in solution through gauze or a wire screen. This simple method is only of value in well marked or heavy parasitic infestations where eggs are abundant enough to be easily detected in feces.

For many years methods have been proposed to concentrate parasitic eggs from a mass of material. All such methods depend upon mixing the feces with a liquid of such density, or specific gravity, that the eggs rise and collect on the surface, from which they may be gathered for examination. Earlier methods employed solutions of calcium chlorid, sodium chlorid, glycerin and others. Within the past year a method has been developed which not only gives far superior results, compared with those of the past, but which also has the advantage of economy of operation, the upkeep consisting of a watery solution of ordinary sugar. This method which was originated by Dr. A. L. Sheather, Assistant Director, Research Institute in Animal Pathology, Royal Veterinary College, London, has been somewhat modified in this laboratory and may be summarized as follows:

Apparatus and Materials

Ordinary bottles or vials for collecting samples.

Gauze or wire netting about 30 mesh per inch (flour sifter will do).

Several stout walled test tubes (4x½ inch) or centrifuge tubes (15 c.c.).

Granulated sugar.

* Presented at the Veterinary Short Course, Iowa State College, and published in the Veterinary Practitioners' Bulletin, Vol. VII, No. 1, August 5, 1925. The 27 illustrations accompanying the article are omitted here.

Several 6-inch lengths of 5 m.m. glass rod.
Microscope slides.
Micro cover glasses ¾-inch squares.
Small fine pointed forceps.
Centrifuge (only necessary for rapid examination). Hand, water power, steam or electric types may be used or adapted to hold the tubes.

Microscope: This should give low power and high power magnifications of approximately 100 and 400 diameters. Types recommended are Spencer Lens Company, 44H; Bausch and Lomb Optical Company, FFS. and E. Leitz, Inc., L. These microscopes are equipped with an oil immersion objective, which may be omitted for parasitic work thus materially lowering the cost. An oil immersion lens may be added at any time, however, making the instrument complete for bacteriologic and blood work.

To Make a Fecal Examination

1. Add just enough water to the fecal sample to liquefy it, mixing well.
2. Coarse particles may be removed by straining through gauze or wire netting.
3. Fill a stout walled test tube (4 in. x ½ in.) about one-third full of well agitated fecal mixture.
4. Add an equal amount of the following solution: Sugar, 1 lb.; Water, 12 ounces. (Dissolve by immersing the bottle in hot water. Phenol 1 per cent may be added as a preservative.)
5. Mix by slowly inverting the tube several times.
6. Either allow the tube to stand 12 to 24 hours, or centrifuge it about 3 minutes at 1500 to 2000 revolutions per minute.
7. Remove the tube from the centrifuge without shaking.
8. Lift off the surface layer of fluid from the tube by means of a prepared glass rod. (A 6-inch length of a 5-millimeter glass rod is heated to redness at one end and "headed" against a solid surface while soft). The rod should be slowly lowered into the tube and the instant full contact is made with the liquid, withdraw the rod quickly, bringing with it a large drop.
9. Transfer the drop from the rod to a microscope slide by gently rotating the rod in the center of the slide.
10. Carefully lower the coverslip on the drop without pressure and search systematically for eggs under the low power of the microscope, using the high power to bring out details. For best results, bright illumination should be obtained with the condenser and mirror and then modified by decreasing the substage diaphragm opening. The microscope tube should be vertical, not inclined.
11. Glass rods and tubes should be well rinsed in order to avoid contamination of specimens examined later.

After a little practice, the above method may be quickly and easily performed. When a centrifuge is available, the entire process from diluting the feces to a thorough examination of the slides need not occupy more than ten minutes. If animals have been given castor oil or mineral oil previous to the examination, some difficulty may be experienced, in that the oil in the feces may rise to the surface of the tube and interfere with the finding of eggs.

There are times when a fecal examination is desirable, but a naturally passed sample is not available. Under such circumstances a sample may be obtained by manual removal from the termination of the intestine. This is relatively easy of accomplishment in large animals but is a more difficult matter in small animals, especially dogs and cats. An enema may produce the desired result, or a long narrow, blunt-edged spoon currette may be gently introduced, rotated, and a sample thus obtained. It is even possible to make a satisfactory examination from the feces that may be washed from a clinical thermometer. It should be borne in mind, however, that if no ova are found in such small samples, a subsequent examination must be made, using a larger sample, in order to detect mild parasitic infestations.

Can mules, horses and cattle be immunized against virulent B. anthracis by the cutaneous injection of anthrax vaccine?

A certified-milk-borne outbreak of paratyphoid fever involving about 60 babies and young children occurred in the state of New York and was traced to a milker that was a paratyphoid carrier.

The expulsion of the larvae of the nasal fly of goats may in some cases be facilitated by blowing snuff or pepper in small quantities into the nasal chambers. This treatment although effective in some cases usually produces severe rhinitis.

Angora goats, even unruly bucks, can be restrained by grasping and holding the beard. Holding and restraining sheep is accomplished by grasping the fleece but such practice is injurious to the fleece of Angora goats.

Rickets and Paralysis in Swine as Affected by Nutrition

G. Bohstedt, R. M. Bethke, B. H. Edgington and W. L. Robison

Lameness, unthriftiness, partial paralysis, or rickets in pigs is very prevalent especially in the winter and early spring. These difficulties, in the life of a pig, may be closely related as to their cause. It has been demonstrated that deficient rations will cause such ailments which affect not only the bones, but also other tissues of the body, especially nervous tissue. Apparently there is something lacking in winter rations that is usually contained in rations in the summer when rickets or lameness rarely occurs. Pasturing pigs has been found a preventive.

The addition of minerals only to the basal ration may not prevent the onset of rickets or related disorders. Neither does the addition of vitamins with an insufficiency of minerals permit proper development. A ration composed of grains or seeds generally, as well as of their by-products—or such a mixture as white corn, flour wheat middlings, linseed meal, and salt—has repeatedly been found to produce unthriftiness, rickets, and death, in pigs. Many pigs are found "going-down behind," which trouble many hog growers attribute to kidney worms. In the rickets and paralysis experiments conducted by the Ohio Experiment Station no kidney worms have been found in autopsies of large numbers of pigs afflicted with rickets, or paralysis. It is the ration that is largely responsible as proved by these tests.

Grains or seeds and their by-products, used so generally in winter rations of hogs, do not furnish enough nor the right kinds of minerals and vitamins. It is due to these two deficiencies, apparently, that trouble occurs. Both minerals and vitamins are necessary. The addition of lime (calcium carbonate), phosphates (di-sodium phosphate), or bone flour, without the addition of vitamins, did not prevent paralysis. Improving the protein of the grain mixture by adding milk protein (casein) or blood meal, even though in combination with minerals, cannot from these data be considered a preventive, although in a previous trial, when no blood meal was fed, the addition of ground limestone did prove a considerable aid.

The addition of vitamins as carried by cod-liver oil furnished a strong growth impulse, but, in the absence of minerals, made for brittle bones that were easily broken. It has happened that a mere twist of the hand would break the hind leg of a vigorous 115-pound shote. Many so-called spontaneous bone fractures occurred in lots of pigs fed the basal ration and cod-liver oil alone. Feeding both cod-liver oil and bone flour, or what appear to be the essential vitamins and minerals, together, made for best results, producing the most uniform and economical gains. None of the pigs became stiff or rachitic. It appears as if vitamins and minerals go hand in hand for proper growth of bones and other tissues. By aerating or oxidizing the cod-liver oil previous to feeding, one of its vitamins, the so-called "fat-soluble A," or butterfat vitamin, appears to be destroyed, or at least decreased, however leaving intact the rickets-preventing factor or vitamin.

Yellow corn in winter rations of pigs has been shown to be more efficient than white corn in preventing rickets. In summer, with pigs on pasture, or in the winter when alfalfa hay was added, white corn proved as good as yellow corn. It is green growing grass and forage crops with their abundance of vitamins and minerals that are the natural practical carriers of these essential food constituents. Good substitutes for grass in winter when pigs are most troubled with rickets, are green leafy legume hays, preferably alfalfa hay, to which pigs and sows should have access, or which after being chopped or ground may be fed to the extent of about 5 per cent in their feed mixture. After demonstrating some of the underlying principles of nutrition with reference to rickets and paralysis, our next step is to try out various feed combinations designed to take care of the needs of pigs in winter in as practical ways as possible.

Summary

Both vitamins and minerals in a ration are necessary for proper growth and health of pigs. Best results were not secured when either vitamins or minerals alone were fed. Precipitated bone flour appeared to be somewhat superior to either calcium carbonate or di-sodium phosphate, but autopsies revealed that all pigs fed

the precipitated bone flour had mottled kidneys, suggesting a toxic effect of this by-product. Blood meal in the several experiments conducted had an unmistakable tendency of hurrying pigs into rickets or paralysis. Proteins did not appear to play as important a part in relation to rickets and paralysis as did minerals and vitamins. It must be remembered that these pigs on experiment were kept in paved lots and did not have access to the soil, the consumption of which seems to be a partial preventive of the disease. This experiment leaves many problems unsolved as to the proper minerals and vitamins, or the optimum amounts of these in a ration.—Monthly Bulletin, Ohio Experiment Station.

Toxicological Notes

G. W. Clough, D. Sc., Royal Veterinary College, London

In this communication a short account is given of some uncommon cases of poisoning recently investigated by the author.

Toxic Action of Cream of Tartar on Ducks

In September, 1924, Captain T. L. Wright, M. R. C. V. S., sent the carcasses of half a dozen ducks to my laboratory with the following particulars: About forty ducks appeared to be quite well in the morning and were fed at 11 a. m. Half an hour later their attendant noticed that some had collapsed. At 1:30 p. m., Captain Wright arrived and found that all the ducks on the farm, except two, were dead. He was told that two buckets of surplus food from the house had been used for feeding; the contents of each bucket had been mixed with middlings and boiled potato peelings, the mixture from one bucket being fed to the pigs and hens without any ill effect, that from the other bucket being fed to the ducks with fatal results.

I found that the crops of most of the ducks were almost empty. A comprehensive search for common mineral and vegetable poisons was made, but none of these was detected. I therefore made a further research on the material from the crop of one duck and on that from the gizzard of another and ultimately separated from each specimen a white crystalline salt which responded to the usual tests for potassium and tartaric acid. The salt was identified as cream of tartar.

This result was reported to Captain Wright, who, on making further inquiries, ascertained that the baking of bread, cake, etc., was carried out at the house and that cream of tartar was used in the bakery. On the day in question a large cake which was "waste" had been put in the ducks' food bucket. Doubtless the cake was discarded on account of its unpleasant taste, caused by the presence of a very large excess of cream of tartar.

Perhaps the chief feature of this case was the demonstration of the rapidity with which cream of tartar acted on the poultry.

The Toxic Action of Zinc on Pigs

In May, 1924, Mr. R. Barron, M. R. C. V. S., forwarded for analysis a sample of sour separated milk taken from a new galvanized tank. Mr. Barron informed me that sour skim milk in cement tanks is frequently used for feeding pigs and is quite wholesome, but that the pigs, which had been fed on sour milk left in contact with the galvanized tanks for some time, had lost appetite and scoured; they recovered when the food was changed.

The milk was found to contain three grains of zinc per pint. It was thus evident that the sour milk acids had acted chemically on the zinc, producing soluble zinc salts which exerted a harmful effect on the pigs.

The Toxic Action of Sulphur on Pigs

A lucid account of sulphur poisoning amongst cattle, horses and pigs, was recently contributed by Mr. F. T. Harvey, F. R. C. V. S. (V. R., Dec. 6, 1924), who stated that there did not appear to be any previous record of sulphur poisoning in pigs. In August, 1924, I received from Suffolk the viscera of a pig which had been slaughtered. The covering letter stated that "the entrails were found to be in a state of mortification," and that "other fellow pigs were in a similar state." I separated ten grains of sulphur from one ounce of stomach contents, and fifty grains of sulphur from one ounce of a selected portion of intestinal contents. The pigs had evidently been given excessive doses of sulphur and were suffering from sulphur poisoning.

The Toxic Action of Animal Oil on Cattle and Horses

An analysis was made in 1924 of some pieces of sacking which had been impregnated with an evil smelling liquid. The sacking had been placed at the entrances to rabbit holes in order to make the rabbits bolt and prevent them run-

ning to ground. The owner of two cows in the field observed one of the cows chewing the bagging. The cows were afterwards noticed to be dull and off their feed. One died in twenty-four hours and the other after a few days' illness.

I found that the liquid on the sacking was Oleum animale fœtidum (animal oil). This is a product obtained by the destructive distillation of bones, from which the fat has not been extracted. By rectification Dipple's oil is obtained. Animal oil is a very complex mixture; it contains pyridine and allied bases, pyrrole, nitriles, amines and hydrocarbons. Pyridine bases are poisonous; workers who constantly handle spirit denatured with pyridine bases frequently exhibit symptoms of chronic poisoning. Rectified animal oil has been used therapeutically, but an excessive dose may produce a fatal result. Gadamer (Lehrbuch der Toxicologie, 1909) states that animal oil has been frequently employed for murder and suicide. The fatal dose for man is stated to be about half an ounce, for a dog one ounce, and for a horse five ounces. Death follows convulsions and asphyxiation.

It thus appears very probable that the damage in the above cases was due to poisoning by animal oil.

A few months ago I received a sample of oil for analysis. Two colts had been dressed with a mixture of this oil (8 parts), Ol. picis (1 part) and Sulph. sub. (1 part). The animals were quite healthy when dressed except for slight skin trouble. On the following morning they were both found dead. Postmortem examination revealed slight gastro-enteritis and partial asphyxiation.

The oil was Oleum animale. The history of the case and the chemical nature of the oil led to the conclusion that the deaths were due to poisoning by the pyridine bases present in the oil.—The Veterinary Record.

A Recent Hygienic Survey of Dairy Practices on General Farms

In spite of all the work that has been done on the improvement of dairy methods, it is still easy to find communities which have changed their methods but little since the pioneer days of agriculture. This is but another illustration of the fact that scientific research is frequently from ten to thirty years ahead of practice. This fact was forcibly brought to the writer's attention in a recent sanitary survey of the milk shed of a plant manufacturing dairy products. The information gained in this sanitary survey is given below with the hope that it may be of interest to others.

Of a total of 201 farms inspected only 1,332 cows were found, making an average per farm of only 6.62 cows, a comparatively low figure. The herds were mixtures mainly of Holstein, Shorthorn and Jersey. A few were of one breed only, most of these being Holsteins. No pure bred herds were found, although a few herds were sired by pure bred bulls. Only one farm was found where a pure bred herd was being developed. No attempts have been made to determine the yield of milk or of butter fat per cow on any of the farms, though all the cows have been tuberculin tested under the co-operative area plan. Many of the cows probably would prove to be unprofitable, if their production records were kept.

The stables showed great variation. One hundred and ninety-four were located upon the barn floor with in some instances, an inadequate wooden partition separating them from the barn proper. One hundred and forty-nine of these had horses stabled with the cows. Other live stock such as hogs and chickens were occasionally found with the cows. In all of these stables the cows were tied up in stalls. Seven basement stables were found, all but one of which housed cattle only, while one had horses as well. One farm had a modern dairy barn for its herd. On the other hand, five very primitive stables were located, the cattle being housed in nothing more than a manure shed and consequently were in a hopelessly filthy condition; the explanation given for these conditions was that it was not natural to tie up cows.

One hundred and twenty stables had proper concrete floors and gutters, the remainder had the original earth or elevated wooden floors. Of the latter only a few provided a gutter, the others trusted to luck and the cracks in the floor to remove surplus moisture. In consequence the ground beneath was far from sanitary.

Regarding light, only twenty-five barns had four square feet of window space per cow. The great majority had less than two square feet. A few had no light at all except that which filtered through the cracks of the walls.

There were only nine attempts at proper ventilation. These had flue systems of various kinds. The remainder depended upon the loose construction of the ceiling, or windows and doors to supply the need. Most of these reported cold stables in winter. Only two stables were found with damp walls and ceilings; one of these was quite moldy and the atmosphere was very uncomfortable to humans.

There was a considerable variety in the methods employed to dispose of the manure, most of which was thrown in a pile just outside of the door. Fifty-one farms had manure sheds, which were usually located beside the stable and greatly obstructed the lighting arrangements. A considerable number had loosely constructed partitions that allowed the odors to penetrate into the stable.

The pails used in the milking were with only a few exceptions very clean and were scalded with hot water before use. Two farmers kept their pails in the stable. These were none too clean. Small top milking pails were found on only two farms. Clean milking suits were unknown although one farmer wore a clean apron during milking, while the remainder wore their work clothes. The cans were washed and steamed at the plant and returned daily by the hauler. Only three farmers made a practice of washing and drying the udder, or going over it with a damp cloth before milking. Sixty-five resorted to brushes or burlap sacking to remove visible dirt before milking. Twenty-three milked with wet or damp hands, the majority of whom dampened the hands to begin milking, taking the milk from the teat, while the remainder replenished the moisture needed with froth from the pail. Almost all claimed to wash their hands before milking.

The predominating cooling system was the simple method of placing the milk can in a tub of cold water and agitating the milk. Only three tin coolers were located, one of which was rusty, but the other two were in good condition. Ice for cooling was found on only one farm and a running spring on another.

Only sixteen milk houses were found out of a total of two hundred and one farms. The majority of these were of concrete construction with cooling tanks built in, the remainder being wood. Only two milk houses were equipped with steam boilers. These had arrangements for washing utensils with cold and hot water and for steaming them.—Donald B. Shutt, Quarterly Bulletin, Michigan State College.

Farm animals that are provided a ration of legume hay and some grain rarely need a mineral supplement.

According to a summary of one volume of the produce register of the American Hereford Cattle Breeders' Association, 6375 cows produced 31,560 calves, an average of approximately five calves each. The following detailed data is interesting:

1401 cows produced one calf each.
820 cows produced two calves each.
557 cows produced three calves each.
468 cows produced four calves each.

Or

3246 cows produced 6584 calves and the other 3129 cows produced 24976 calves.

That is, 50.83 per cent of cows produced 20.86 per cent of calves and 49.17 per cent of cows produced 79.14 per cent of calves. It would be interesting to know whether the low production cows were largely confined to the same herds or were rather evenly distributed through all of the herds. It is certain that the production of only two calves for the entire breeding period of a cow is unprofitable, and the present conditions of high priced feed, labor and land will necessitate increased breeding efficiency.

The opium advisory council of the League of Nations estimated that 100 tons of opium, 136 tons of morphin, 84 tons of codeine, and 15 tons of heroin are required annually for legitimate medical purposes. The amount of narcotics produced is not known but has been estimated at over 8000 tons annually which is more than twenty times the amount actually required for medicinal use.

The relative susceptibility of the skin and subcutaneous tissues to B. anthracis is of considerable interest and may be of importance in solving the problem of a permanent immunity. It has been shown that a fatal dose of B. anthracis in the skin of a rabbit can be tolerated subcutaneously. A subcutaneous inoculation of a non-lethal dose produces an immunity to both dermal and transcutaneous inoculation in some animals.

Bovine Infectious Abortion

Diagnosis

The history of the herd and the individual animal history are valuable aids in establishing a diagnosis of bovine infectious abortion, but in order to definitely establish the diagnosis requires that the Bacillus Bang be found by microscopic or cultural study or that specific laboratory methods of study be used, for example, serological tests.

Most all herds to which cattle have been added from unknown sources or from sources where it is not known they are free from bovine infectious abortion, are likely to be infected with Bang abortion disease. To establish a diagnosis of the presence of this disease in such a herd requires only that all animals in the herd be subjected to a blood test for bovine infectious abortion.

A number of the smaller herds at least in Pennsylvania are free from infection with Bang bacillus and in these herds the owners should aim to practice a system of herd management which will keep them free. This system of herd management must require the practice of the principles of disease prevention.

Importance

No disease of cattle in this country causes a heavier loss to the dairy and beef industries than does bovine abortion. Many owners of dairy herds have been forced out of business on account of Bang abortion disease and its sequelae. The loss in Pennsylvania is roughly estimated at considerably more than $5,000,000.00 annually. This is based on the estimated milk loss alone. Calf loss and loss of beef herds are not estimated.

Herds of cattle are efficient to a greater or lesser extent from several standpoints, from a breeding standpoint and from the standpoints of milk and beef production. Herds free from Bang abortion disease have been known to show an average breeding efficiency of 100 per cent over a number of years. Herds free from the disease usually range between 90 and 100 per cent efficient from a breeding standpoint. Herds extensively infected from a breeding standpoint usually fall below 60 per cent efficient and seldom go above 75 per cent either from a breeding or milk production standpoint. Herds showing a low efficiency must sustain a rather enormous annual loss and in a very few years the loss has amounted to more than the value of the herd.

Treatment

No successful method of treating infected animals has yet been discovered.

During our course of study of this disease in Pennsylvania over a period of at least 25 years, sufficient and possibly too much recognition has been given proposed remedies or cures, vaccines, preventives, etc. We have given place for trial of the carbolic acid method of treating pregnant cows, the methylene blue treatment, and have seen tried many of the other supposed remedies. There are still a few breeders who are willing to increase the maintenance expense of their herds in useless and possibly harmful concoctions which are purchased at comparatively high costs. Veterinarians should properly advise their clients as to the possible outcome after such remedies have been used.

Wonderful advancement undoubtedly will have been made when some agent has been discovered which will destroy abortion infection in the carrier cow. It is very likely that when this use of some agent is discovered it will not be by some person who has no conception of the nature of animal diseases as has been the case with many of the proposed remedies.

Money which has already been expended by breeders in trying out useless remedies would, if it were available, establish and properly equip a research institute suitable for a concentrated study of this disease.—M. F. Barnes, Bulletin, Penna. Dept. of Agriculture.

ANIMAL DISEASE LOSSES CUT DOWN

The fight for the prevention and control of animal diseases is another field in which the Minnesota Agricultural Experiment Station has rendered the farmer most efficient service. The veterinary laboratory of the station, co-operating with the State Livestock Sanitary Board, examines annually thousands of specimens of diseased animals, reporting promptly to the owners, thus paving the way often for the prevention of large losses. In addition, the station is making thorough studies of means for the prevention and control of such diseases as contagious abortion and sterility, tuberculosis, and similar causes of losses among Minnesota farm animals. While cures are looked for, the station places emphasis chiefly on prevention. The station co-operates closely with the Minnesota Veterinary Medical Association.

CASE REPORTS

My Experience in Animal Castration*

G. W. Browning, V. S., Mobile, Ala.

I castrated my first horse in the year 1880, and it was done with the animal in the standing position, using sumac wood for clamps with the pith removed and red precipitate or red oxid mercury ointment in the groove for an antiseptic. I castrated only four colts the first year and continued castrating in the standing position for five years. However, after three years, I did away with the clamps and used the Halstead emasculator, which as far as I know was the first emasculator gotten out. Up to this time, I had never castrated a cryptorchid or so-called ridgling as this operation could not be done in the standing position. I began casting all of my straight colts as well and found if proper throwing hopples were used there was really no more danger to the horse than when it was castrated standing, and I am sure there is not as much danger to the operator, although in all my five years of castrating standing I never got a scratch, and after the first year I averaged sixty or more a year.

About this time, I began to get calls to go some distance to castrate cryptorchids, also straight colts, especially where one had a valuable racing colt, or an old stallion, until I began to do a rather large business, and for several years castrated as many as 300 straight horses and 40 cryptorchids a year. This was in central Illinois, and I got only $1.00 a head for straight colts and $10.00 for ridglings. However, I have castrated as many as 36 colts for one man. While at the present time I get from $5.00 to $10.00 a head for straight colts and $25.00 to $50.00 for cryptorchids, I castrate only from seven to fifteen a year. As the reader will understand, that is what the automobile has done for this branch of veterinary surgery.

The following is the modus operandi I use at the present time and have used for over thirty years. I use a Knowles casting harness. After trying almost every harness and appliance on the market, I have settled down to this as being the most simple and attended with the least danger. I yet have my first horse to hurt with this throwing rig. If a straight job, the colt is always thrown on its left side, a half hitch taken on the right fetlock, and as quickly as possible the rope is carried over the back around the rump and forward between the legs to the same fetlock and securely fastened. This is done especially with a mule or he will bow his back, tuck his head and slip out of the collar before one has time to get him tied. The lower rope is then half-hitched first around the under front leg, then the upper front leg, then tied to the lower hind leg. In this way the animal can't hurt anyone.

As to the technic of the operation, I first have prepared a pan or pail of water that has been boiled, in which I put sufficient lysol to make it slightly antiseptic, not to wash the scrotum with, but to wash my hands after handling the ropes, horse, etc. Now, I bathe the scrotum well with acetone until all dirt, sebaceous and sudoriferous material is removed. If the testicle is well swung, I catch it up with my left hand, make a longitudinal incision about an inch from the raphe or median line and parallel with it through the scrotum and peritoneal covering, but avoid cutting into the testicle as this causes unnecessary pain. However, when I was castrating standing, I would cut into the testicle for the purpose of making the horse very sick for a few minutes, and he would squat and usually stand quite still throughout the operation. But when the horse is thrown, this should never be done as it is more humane not to do it, and I belong to the humane society.

The testicle being exposed, instead of dividing the non-vascular parts from the posterior part of the organ, I stick my knife between the cord and reflex tunic with the cutting edge upward, cutting upward and outward, removing all of this non-vascular tissue with the testicle, which leaves a clean cavity and nothing to hold clotted blood and other debris as it will if it is divided close to the testicle and allowed to fly up into the inguinal canal. In this connection, I wish

* Report awarded 3rd Prize.

to state that I was the originator of this method, not having seen it in any literature on castration up to the time I recommended it in a paper I read on castration at a veterinary association meeting in the year 1897. The way I got on to it was by watching my old Scotch uncle castrate lambs when I was eleven years old. Every spring some Sunday morning, he used to have me go to his sheep ranch and hold his lambs while he castrated them. For a layman he had some good ideas on this branch of surgery, and I never forgot this procedure of his and his reasons why he did it, as I expected even in those early days of my boyhood to some day go to a veterinary college and graduate as a veterinarian.

I remove or rather prepare the left testicle first, then prepare the right or top testicle in the same way. I now pick up both of the testicles at once, using the second finger for pressing down the raphe. This is done with my left hand, and with my right hand, I slip the chain ecraseur over both testicles, run the chain as high as I can up both cords and take both testicles off at once. By this method there is never any water seed, as the layman calls it, nor a scirrhous cord, nor champignon.

After removing the ecraseur, I take my knife and enlarge the opening on each side by cutting forward so as to let the drainage have a straight shoot downwards. In this way one is very seldom bothered by the wound closing up too soon. However, if the subject is a flanker or a young colt with one testicle high up, I never bother trying to get the testicle to cut on but catch up a fold of skin in front and make an incision the length I want, cutting through the skin and dartos. Then I have no trouble in securing the testicle and removing it. In these cases, of course, I take off only one testicle at a time.

Next I pour each cavity full of acetone, then pour in some antiseptic oil composed of one ounce of oil eucalyptus and eight ounces of olive oil. I let the animal on its feet with instructions to the attendant to keep it in a clean stall, giving daily walking exercise, unless it is to be turned in a pasture where it can take exercise as it likes.

In the castration of cryptorchids, I use the same throwing rig as for the straight colt, only I have the side upward that the missing gland is on, and if a double ridgling, I cross the ropes on the back and turn the horse on his back. I used Niles leg spreader when I first began operating on ridglings but soon found it could be dispensed with if the horse is properly tied. Flexing the hind leg by bringing the fetlock to the stifle exposes the inguinal region and relieves the hand from pressure sufficiently without the spreader. The procedure of cleansing and disinfecting the parts is the same as for the straight colt.

However, the removal of the testicles is attended with a great deal more danger to the animal's life in these cases. I make my incision through the skin similar to that in a straight colt, only I make it a little farther from the median line and the front end of the incision a little farther away from it than the posterior end. By this method there is not so much pressure on the wrist of the operator as where one makes the incision nearer the seam.

The incision being made through the skin and underlying tissue of the scrotum, I wash my hands with acetone, then go over them with the antiseptic oil, introduce my hand by putting my fingers together cone-shaped, being careful to go between the large blood vessels of this part, passing the hand up the inguinal canal, always going in front of Poupart's ligament until the internal ring is felt. At this stage, if no testicle is felt, we know it is in the abdominal cavity, and we have to rupture the peritoneum to locate it. I then run my finger an inch or two above the internal ring before I break through the peritoneum for the reason that one is not so likely to cause the intestines to come out when the animal is let up on its feet. After breaking through the peritoneum into the abdominal cavity at this point, the fingers are close to where the suspensory ligament of the testicle originates just under the psoa muscles. With one and at most two fingers hooked around it, the testicle is brought down and removed with the ecraseur, as in most cases the cord is too short to use the emasculator.

I then disinfect the wound as I do in a straight job, and after releasing the subject from the ropes, I give instructions to walk the horse for an hour, then tie up short for twelve hours. After this he is turned loose in a clean bedded box stall, and unless there is a paddock for him to exercise himself, he should be walked two or three miles each day.

I have said nothing as yet about my fatalities or the loss due to my castrations, but will say right here that I have had some losses and am not like a few men whose articles I have been reading who have had no losses. When one does the large number of operations I have done, one is bound to encounter an occasional horse that will die, I don't care how well the operation is performed. Also I have made some

mistakes, I will admit, in my earlier career. Any of us will make occasional mistakes. There are only two men that do not make any mistakes—one is a dead man, and the other is not doing business, for there is no man in business but who will make mistakes. However, if we will profit by our mistakes, they will not hurt us so much.

Why do some operators fail to castrate a cryptorchid? In my time, I have been called upon quite often to operate where some one else has tried and failed to find the missing gland, and I find that most of the failures are due to two things.

First, by not properly tying the horse so that the inside of the thigh will not press forward on the arm and paralyze it, preventing the operator from having the proper sense of touch he requires for such an operation.

The second and most frequent cause is where the operator reaches in behind Poupart's ligament, and instead of breaking through the peritoneum at the proper place, he goes too high up, pushing the peritoneum off from the abdominal wall, producing a barrier between the hand and the testicle.

I will relate a couple of cases that came under my observation.

Case No. 1. One forenoon I had made a trip to a village some twenty miles from where I was located to castrate a ridgling horse. After finishing the job, which was about six miles from the station, the owner of the animal brought me in to take the 10 o'clock train back. Just as I was ready to step in the car, a man caught me by the arm and said not to get on that train as he had a very bad case out at his place and wanted me to go right out with him, a distance of three miles from town. He said old Joe M., who was a good colt cutter, had come out to his place that morning and castrated several colts, and the last one he threw was a ridgling. The owner said he told Mr. M. to let the horse up and he would send for a veterinarian to do it. Mr. M. said he could do it as well as a veterinarian could, and the owner consented to let him try. The rest of the story was that the man had the horse down two hours with his arm in up to the elbow but never found any seed.

I proceeded to get my hopples on the horse and try my hand at it. I found the quack had never gotten inside of the peritoneal cavity at all but had pushed the peritoneum off from the abdominal wall. I saw that I could not break through with my finger and had to slit the peritoneum with my knife. On reaching inside I had no trouble locating the testicle and removing it. However, when I brought the testicle out, about three feet of intestines came along with it, as I had expected from the large sized opening the first operator had left. I set to work after removing the testicle to reduce this ventral hernia and succeeded in returning the intestines, then took my full curved needle threaded with linen and made a tobacco pouch suture close to the internal ring. The outside cavity was packed with antiseptic gauze, the skin brought together with heavy thread and a large needle. The horse was let on his feet, and I said to myself, "Old fellow, you're a goner," for I was sure if he did not die from shock in the first twelve hours, he would die from peritonitis by the third day. The owner insisted that I come back the next day and dress the wound. It was about twenty-four hours before I got down there, and to my surprise the horse was still living with a temperature only of 102° F., pulse 60 and respiration little above normal. He was very badly swollen, the swelling having extended to his front legs. I cut the stitches, let the gauze drop out and went over the whole swelling with a mixture of one part of acetone and three parts of witch hazel, and left a bottle of the same mixture with the owner to apply once a day, with directions to keep all water off the parts. I never heard anything more from the case for about three weeks, when I was down in that section and learned the horse had made a good recovery.

Case No. 2 was a three-year-old double cryptorchid, which had been operated on twice, about two months apart, by two different operators without finding a testicle either time, and I was informed by the owner that each operator had the guts out but put them back and sewed the animal up without finding any testicle. The owner wanted to know if I thought I could find the testicles, and I informed him that if there was a testicle inside of the horse I could get it, at least, that was my belief, but I thought it doubtful about the horse living after having been cut open so many times. A date was set for me to come and try it. The place was 120 miles away. I found a large crowd that had come to see another failure, and I had no trouble this time about help as I had plenty of it.

As this was a double ridgling, I had him held on his back, and by examining the inguinal region, found both of the previous operators had gone too far back, which made it better for me, as I could go in front of the adhesions and be in the right direction. I was but a few minutes in removing two fairly good sized testicles, used

the usual aseptic precautions and let the animal on his feet, and had no intestines out either. This horse made a good recovery after being operated on the third time, and I wish to repeat that if we make the opening into the abdominal cavity high enough up so when the horse is on his feet the intestines drop down below the slit in the peritoneum, there is very little danger of the intestines coming out, providing the patient is walked an hour to prevent any colic from air entering the abdominal cavity. Then tie up short for twelve hours to keep the subject from lying down, and by this time the swelling will have closed the orifice.

However, it is hard sometimes to get the owner to carry out the instructions, and if the patient dies, it is usually blamed on the operator, so the life of a veterinarian is not all a bed of roses.

ANTEPARTUM PROLAPSE OF THE VAGINA

(Report awarded 1st Prize)

On November 2, 1924, I was called to attend a seven-year-old Jersey cow, and on asking the nature of the case, was informed that the cow's "insides were coming out."

On arrival I found the cow in a standing position with the prolapsed parts and genital region much irritated from exposure and the result of chickens pecking at them. The animal seemed in good spirits, other than that she strained occasionally in an attempt to relieve herself. The owner informed me that the cow was seven months pregnant.

My diagnosis was antepartum prolapse of the vagina and partial prolapse of the gravid uterus.

Having had poor results in the treatment of prolapse of the vagina, especially in Jersey cattle, I gave a grave prognosis.

An attempt was made to cleanse the parts as well as possible with the cow in the standing position. I stood on a manure pile and used what facilities were available. A normal saline solution was used in cleansing the exposed parts followed by a mild solution of permanganate. Straining persisted so that replacement of the prolapse seemed impossible. Two ounces of chloral hydrate were given in a drench, which put the patient down and relieved the straining, when another attempt was made to replace the parts. After fully an hour later, this was given up, and I asked the owner to obtain if possible a block and tackle.

The block and tackle was attached to the rear lower limbs of the cow and the entire animal elevated to the beams of the barn with her nose dragging the floor. This seemed to excite the owner who said, "Give her hell, Doc, she ain't worth a damn the way she is." I then mounted a salt barrel and several boxes and proceeded to execute some of the technic that I did not learn in college. The parts were again washed and another attempt made to replace them. Gravity naturally was of great assistance, and the entire prolapse immediately dropped into place. This eased my mind, but I was thinking now of how I was to prevent another such occurrence. With tape and while the patient was still elevated, I stitched up the entire vulva, leaving only enough of an opening at the lower commissure to permit the animal to urinate.

The cow was then lowered to the floor. The owner, neighbors and myself were much relieved. The patient was soon made to assume the standing position, and with some binder twine an improvised truss was made, which the owner was instructed to leave on the patient until signs of parturition were seen.

I heard nothing further from the owner but often wondered about the outcome of the case until about seven weeks later, when the client called and informed me "the cow we worked on has a nice living calf, but her insides are out again." Feeling much relieved at hearing about the cow and especially that she gave birth to a living calf, I had little fear of the prolapse now. I attended her again and remedied the condition by the same means as before, using tape and binder twine, informing the owner to leave the truss on until it fell off, which he did.

Several days ago I was asked to apply the tuberculin test to this owner's herd, and on raising the tail of this cow for the injection of tuberculin into the caudal fold, I observed the stitch wounds from our previous labors.

I offer this little story for those who may find themselves up against a similar case. I might say also that this is the treatment par excellence for torsion of the uterus either partial or complete, but might add that a laparotomy incision has been made in several cases to assist in correcting the torsion by introduction of the hand into the abdomen.

Truman B. Hinkle, D. V. M.
Ashley, Ohio

Most laboratory workers have assumed that bacteria are killed by the process of staining with the usual aniline dyes, but Schmidt has found that various pathogenic bacteria are still viable when fixed and stained with aniline dyes, however, those subjected to the Gram process are destroyed.

NYMPHOMANIA IN A MULE

(Report awarded 2nd Prize)

By the laws of nature there sometimes appears to mere man an idea that he can improve that law.

The subject, a 1000-pound, five-year-old, bay mare mule, had worked at general farm service for three years. In the spring of her fifth birthday, the animal developed a marked viciousness, kicking at the least provocation, biting, pawing, and in every way became very dangerous to men and the livestock on the farm.

The owner and his hired help tried by all kind methods to work the mule without success. After kindness and gentle handling accomplished nothing, a rough and tumble, cruel effort was made with the result that "Maude" was victorious.

The owner related the conditions to me and told of the animal constantly switching her tail and urinating when excited. A diagnosis of nymphomania was made and an operation advised.

The animal was brought to the hospital and proved to be a real outlaw. A person passing the box stall would start the mule to kicking, biting the manger and pawing the ground. Another animal approaching the stall would be met with the same welcome. She would leave an appetizing feed to give vent to her wrath.

The subject was dieted for five days with wet mashes without hay. The sixth day she was roped with various restraints in order to get close enough to give an ounce capsule of chloral hydrate and one of cannabis indica. At the end of sixty minutes, the patient was ready for the operating table and with little resistance was placed thereon. With the animal's right nostril closed with a pledget of cotton and the left nostril, lips and nose covered with a coat of vaselin, chloroform was administered by inhalation until perfect relaxation was had.

An assistant with a bandage wrapped the tail from the first coccygeal vertebra to the end of the tail and all fecal matter was removed from the rectum as far as the arm could reach. The anus, lips of the vulva and surrounding parts were thoroughly washed with a 1-1000 solution of bichlorid of mercury. The bladder was catheterized and a Chlorazene solution used to douche the vagina. With a thoroughly sterilized mare ecraseur and scalpel ready, hands clean as 2 per cent germicidal soap and hot water could make them, finger nails trimmed and smooth, the hand and arm lubricated with carbolized olive oil, I introduced my hand cone-shaped into the vagina. In a few moments, the ballooned vagina afforded ample room to use the hand freely. The right hand with the scalpel guarded was carried forward until the cervix of the womb was felt, and with fingers closed to form a fist, the cervix was gently forced downward and forward. With a careful upward stroke of the scalpel, an opening, about one inch long, was made in the roof of the vagina. Removing the knife to the instrument pan, the opening in the roof of the vagina was enlarged by two fingers, then by the hand, which was gently passed through the opening.

With the chain of the ecraseur released sufficiently to pass around four fingers, the ecraseur and chain were carried through the opening. The right ovary was removed first and laid on the table; then the left ovary was located with some difficulty due to its size being about six times the size of the right one.

The animal regained consciousness in about thirty minutes and was placed in a clean box stall, fed and observed for ten days, then placed on pasture for thirty days, at the end of which time she was returned to the farm.

With fear and trembling an attempt was made to work the mule. Much to the surprise and pleasure of the owner, "Maude" was perfectly docile and a willing worker and is serving the purpose for which her kind by nature was intended.

E. W. Miller, D. V. M.

Winchester, Va.

IODIN FOR CANKER

A two-year-old fox hound was noticed to be continually shaking his head and scratching at his ear with his hind foot. On examination, I found a thick substance exuding from the ear with a very fetid odor.

The ear was carefully swabbed out with pledgets of cotton, being particular to clean all the wrinkles and ramifications. It was then swabbed out with cotton dipped in tincture of iodin. This process was repeated every other day for two weeks, which resulted in complete recovery.

I have called this condition canker and have outlined a simple and effective treatment as I found it. However, if some canine specialist wants to call it something else and give a different or more complicated treatment, he has my permission to do so.

Rembrandt Morgan

Winfield, W. Va.

"FRIGHT DISEASE," A FIGMENT OF THE IMAGINATION

(Report awarded 3rd Prize)

This dreaded so-called "fright disease," I am firmly convinced, is but very seldom if ever a true disease and a term often applied for want of an intelligent diagnosis. As a result, the laity, dog fancier and ordinary owner, suffer more "fright disease" than is seen in dogdom itself. Any number of good men who have had one experience with distemper or "fright disease" are in the market for a good dog providing they can be assured of some degree of protection from these troubles. It is a matter of no meager consideration for the canine specialist to go after these troubles tooth and nail. It is our duty to take these cases into the hospital, observe carefully, study intelligently, and with autopsies of procurable cases, come to a more definite understanding of this term, which is too often applied to cover one's personal ignorance of the diseases of the smaller animals. This in turn works hardship on the veterinarian by causing undue "fright disease" in the dog owner.

I personally have encountered several of these cases that came out O. K. when haste, speed and commercial veterinary medicine were laid aside and replaced by actual service, associated with patient study and days of observation, not for remuneration, but for the love of the game and good name of our profession. To substantiate these statements, I will offer a report of a case for study, which in my experience was the most virulent and violent attack of this dreaded "fright disease." To this day I have not offered my client nor myself a positive diagnosis in the matter but did abort the condition to the full satisfaction of all concerned.

In a kennel of eighteen Springer Spaniels and Setters, bench and field trial winners, imported stock, none better anywhere, recently, or to be exact on the 17th day of October, three of the Springer Spaniel puppies, eight months of age, went on a terrific rampage, and by the 23rd day of October, sixteen of the eighteen dogs in this kennel were suffering from "fright disease." Experts in the dog game shook their heads and in sympathetic tones tried to console the owner of this kennel, who had placed in it a goodly part of daily happiness and no small amount of money, for he truly loves a good dog, and no make-believe about that part of it. Consultations? Yes, we had them, and again the dreaded words were cautiously spoken and sympathy extended. The owner wanted to kill the whole bunch, possibly taking chances on some of those not reacting so badly.

Personally, I had charge of this kennel and was responsible for the health of its inmates. From the very first, I denied, swore to it and tried my best to convince the parties concerned that it was not "fright disease." "Well, what is it?" was the question always turned back to me, sometimes in wrath. Some diagnosis had to be rendered. So I made a tentative one of severe enteritis associated with auto-intoxication, resulting in this nervous reaction.

There had been no sickness before in this kennel with the exception of colds, worms in puppies, injuries, etc., and similar generalities. The dogs were ideally quartered, exercised, and in general there was nothing to correct in the care and attention of the dogs individually or collectively.

The symptoms were those of "fright disease" all right, the dogs screaming, not howling or barking, for spells from one to fifteen minutes, seeking cover, and going into an unconscious state. One dog starting the fuss, several were sure to follow, and such a noise! I did not wonder that the owner wanted to kill the whole bunch. However, in spite of all these disturbances, the dogs appeared in excellent condition with appetites remaining normal, temperature normal, and between spells were apparently normal in every way.

These dogs were fed twice daily on skimmed milk, dog biscuit, meat and meat stock with some vegetables specially prepared. Every detail of the management of these kennels was given what I considered careful examination. Finally, when nothing definite could be established and the treatment administered seemed to do no good, the owner decided to sacrifice Bell, a valuable setter, for postmortem examination. Again, while I much liked to have this assistance, I decided to take two more days on the matter and then destroy Bell if nothing could be found. My client became sick at this time from worry and what he considered the loss of his greatest pleasure in life. I kept talking something encouraging, something that meant almost anything, not only for the welfare of my client, but for my personal morale which was sinking also.

There were six varieties of dog biscuits and kibbled food fed at this kennel. About October 1st, a thousand-pound shipment of feed was received and fed exclusively, which the dogs relished and ate with gusto. On examination, this feed was apparently beyond question and, coming from a very reliable firm, was to all of us beyond any criticism. As a last straw, I

carried about half a bucket of this feed to my office late one afternoon, placing the bucket beside my desk near an overheated radiator. After treating several cases I came into the office, and once more or about the thirtieth time, I handled this feed and smelt it. Ah! here it was at last. Having a slight cold and my sense of smell being somewhat dulled, I carried this warmed feed to my better half, Mrs. G., and asked her to tell me what it smelled like. Fortunately, she named what I could not determine exactly, stating that the smell was like that of grease which the local farmers save from time to time ultimately to make into home-made soap.

Up to this time, I had been treating these dogs with a prescription of pepsin, pancreatin and calcium-lactophosphate, with triple arsenates; and also successfully wormed each dog that presented such intestinal infestation. For the convulsions, I was using luminal-sodium and had cut the diet down to about half, also exercised the dogs regularly but never a good work-out.

On finding this reliable dog feed had gone bad, I immediately administered polyvalent botulinus antitoxin, types A, B and C, purged each animal and discontinued the food mentioned. In forty-eight hours this dreaded disease had passed on, and I hope it never returns again.

Had I acceded to the several diagnoses of "fright disease," the profession would have lost a valuable client, a fancier of the country's best hunting dogs, and many of his friends would in the future refer to this unpleasantry as a plausible reason not to invest in a good dog. My client is not having any dogs killed now, is happy beyond means of expression, and I feel pretty good myself.

Had this feed not been placed to that overheated radiator, these dogs would most likely have consumed about 900 pounds more of the "junk," and as a result no doubt there would have been eighteen dead dogs of quite some commercial value, to which was added a sentimental value that could not be measured in money.

A sample of this food was examined by a certain laboratory, with report to be kept confidential for the time being at least. Also the name of the feed is withheld due to the fact that the manufacturer is reliable. However, someone slipped up here with almost disastrous results. Once more "fright disease" is exploded for the welfare of all.

O. E. Gladfelter, V. M. D.

York, Pa.

INTESTINAL WORMS IN POULTRY

(Report awarded 4th Prize)

During the month of September of this year, a farmer brought to my office a dead Plymouth Rock hen and left word at the house, as I was away, for me to examine it and see why it died. When I arrived home, I examined the hen but could see no reason why it should have died, as it appeared in excellent condition and appeared to have been healthy. I decided, however, that the cause of death might have been apoplexy.

I called up the owner and told him what I found and my final decision. I asked him if he had lost any others and he informed me that during the previous two weeks he had lost between 40 and 50 the same way. Right then and there, I decided my diagnosis was wrong and advised the farmer to let me come and look the situation over.

His flock was made up of the laying strain of Plymouth Rock, real good stuff, and I should judge there were about 150 of them. The owner took a lot of pride in them, and I agreed with him when he said that he thought he had some reason for worrying.

As far as I could see everything looked healthy and thrifty, but I was shown around to a shed, and there were lined up eight hens, four half grown chicks and one duck in all stages of the disease or complaint. Some were walking around rather listlessly, some sitting down and others had their heads bent back, etc. The owner said they would be sick four or five days and then die. They would lose their appetite first and then would refuse drink, but the first day or two they seemed very thirsty. One of the peculiar things about it was that a lot of the birds died with their heads as red as though they were laying. Some seemed to have diarrhea and others didn't.

We caught and killed the most typical subject, and examination revealed all organs apparently normal. We noticed a few inflamed spots on different parts of the intestines, but we considered them normal at first. We then decided to split the intestines from end to end, and here we were rewarded, because we found roundworms and tapeworms in quite large quantities. We opened four birds and found them the same.

The owner asked me if I thought the worms were killing the poultry, and I told him "yes." Well, he doubted it, as he had never heard of worms killing chickens. I asked him if he had ever heard of a chicken having worms, and he said he hadn't. He had reached the stage, how-

ever, where he was willing to do anything I suggested, even to killing the balance of the flock.

I used the treatment recommended by the Oklahoma Experiment Station for tapeworms, which is the same as the one recommended by the Ontario Department of Agriculture in their Bulletin 305 on the diseases of poultry.

I had the owner catch all his poultry that night and shut them up, feed them their usual feed the following morning, then starve them until the next morning, and then give them all they would eat of the following mixture.

To a gallon of a mixture of wheat and oats, add a small tablespoonful of concentrated lye and then cook slowly for about two hours and allow to cool. The birds were allowed all the water they could drink.

The owner also sprinkled lime in large quantities around the yard and sheds.

This treatment seemed to work wonders as there was not one sick chicken after treating them this way. The owner repeated the treatment the last week in October, and I advised him to do it at least three times next year, and I know he will.

H. J. Davis, B. V. Sc.

Aylmer, Ontario

Dr. T. B. Harries, Strathmore, Alberta, winner of second prize in the November contest for his report on calf pneumonia.

THE USE OF ANESTHETICS PAYS IN MORE WAYS THAN ONE

(Report awarded 4th Prize)

One sunny morning last July, I was called on my rounds to see a lady's saddle mare that had been kicked and required half a dozen sutures in the upper third of the semimembranosus. This being an impromptu call, I had inadvertently left my local anesthetics and hypodermic syringe at home. The owner assured me the mare was extremely quiet and would "stand for anything." I therefore decided to treat the patient right away despite the fact of always endeavoring to cause as little unnecessary pain to my patients as possible.

As a counter-attraction, a twitch was applied, which the owner held, while the wound itself was copiously bathed with ice-cold water in the hope of deadening its sensation when the needle entered. All went well until the third or fourth suture was inserted, when without any warning I saw many stars from a prone position. When recovered I found myself minus five perfectly good incisors and with a lacerated lower lip which required eight sutures to bring its affected parts into apposition. The local anesthetic used in my case was not sufficient to prevent my feeling considerable pain, and I wanted to kick, too.

The point in this preamble is that the mare merely demonstrated her pain, which otherwise I would probably not have noticed.

For various reasons, such as callousness, thoughtlessness or familiarity with seeing animals controlled and so unable to evince their pain except by wincing and struggling, many busy practitioners all too frequently cause an amount of unnecessary suffering to animals. As a possible means of even slightly remedying this condition, a few suggestions are put forward from my own experience in this field.

In castrating colts, it is an accepted fact that general anesthesia is not practicable from the point of view of time involved. Also no method of local anesthesia is altogether satisfactory. But rather than do nothing in this condition, I use one of the two following methods:

(a) Carry an atomizer and spray ether on the scrotum for a few minutes immediately prior to operating.

(b) Saturate well with gasoline and use no other antiseptic except to flush out the wound afterwards.

By this process, two advantages are gained—primarily, a numbing and deadening of the pain is produced; secondly, the scrotum covering the

testicle is cleansed and dry and so easier to manipulate than if left wet and slippery from an ordinary aqueous coal tar antiseptic solution.

In the case of aged stallions, where general anesthesia is not applicable, one can get great satisfaction from the use of chloral hydrate administered by the mouth fifteen or twenty minutes previously, or the subcutaneous injection of H. M. C. tablets.

In boars of all ages, except small suckling pigs, it is always worth while to administer a warm rectal injection of chloral hydrate in a suitable vehicle of a strength approximating one-half dram per 45-pound weight of pig.

The point I particularly wish to stress is that besides using "generals" in all major operations, considering the many useful locals, soporific and narcotic drugs, with which we are all familiar, we should make greater use of them than we now do in the minor everyday cases we handle.

Again, in the matter of painless destruction, especially of small animals, I have tried many methods, including hydrocyanic acid by the mouth, intratracheally and directly into both heart and lungs. Although in most cases rapid results are obtained, yet more or less intense pain is caused.

One method which some recommend as instantaneous is the injection of chloroform or ether into the heart. The writer has seen cats and dogs collapse almost immediately as a result, and again others die in acute prolonged agony.

Complete anesthesia has much in its favor for lethal purposes. In my opinion, however, the humane method par excellence for the busy field veterinarian is a .22 calibre pistol (with a silencer attached if desired), and in the case of large animals, a .44 calibre weapon, or automatic killer. Properly placed a bullet is by far the most merciful method with no reflexes or evidence of pain whatever.

By giving thought to this aspect of our work and applying its principles whenever possible, we are not only championing the cause of humane treatment of dumb animals, but are raising the standard of the profession and gaining the confidence and necessary good will of our clients, thereby furthering our own interests as well.

Frank N. Wheatley

Fort Qu' Appelle, Sask.

GIANT FEMALE ASCARID FOUND IN SWINE

The lengths of Ascaris lumbricoides found in swine vary considerably, and our standard textbooks differ as to the average lengths.

Some time ago the writer became interested in learning just how much the ascarids in pigs varied in their lengths and measured 92 adult ascarids, 38 males and 54 females. The males varied from 15 cm. to 22.7 cm. and the females from 23 cm. to 39.6 cm. These measurements are somewhat longer than the ones given by Neumann in his treatise on Parasites and Parasitic Diseases of Domesticated Animals. He states that the male ascarids from pigs vary from 15 to 17 cm. and the females 20 to 25 cm. in length.

What is still more interesting, a couple of years ago I found in a pig a female ascarid that measured 47 cm. in length and believed that one to head the list in length, but recently I forwarded one to the Zoological Division at Washington that measured 53 cm. in length by 5 mm. in width. I believe this one surpasses all records in literature on the subject. The maximum length reported for the human ascarid was 40 cm. and the maximum length for the swine ascarid was 44 cm. The maximum width reported appears to be that of a human ascarid 35 cm. long by 1 cm. wide as reported by Guillermet.

H. B. Raffensperger

U. S. B. A. I. Zoological Laboratory

Chicago, Ill.

UTILIZATION OF MINERALS BY EWES DURING THE PERIOD OF GESTATION

Five ewes were used for mineral balance studies, from early gestation to parturition. The rations consisted of oats, corn, and linseed meal with timothy or alfalfa hay and salt. In addition to digestibility and nitrogen balances, a record of the utilization of sulphur, chlorin, calcium, magnesium, phosphorus, sodium, and potassium was kept during the first 20-day period, and of calcium through the succeeding periods to parturition.

The nitrogen, sulphur, magnesium, potassium, and phosphorus, balances were all positive. Two-fifths ounce (12 grams) per day of common salt per 100 pounds of live weight furnished enough sodium and chlorin for equilibrium or slight storage of these elements. The addition of precipitated bone flour to the rations increased the storage of calcium. During the early per-

iods of gestation the ewes were in negative calcium balance on the alfalfa rations, but they stored calcium rapidly during the last two months.

The lambs were killed at birth and analyzed. The ratio of calcium to phosphorus metabolized by the pregnant ewes for development of fetuses was about 1.5 to 1. The average calcium content was 31 grams, and phosphorus 20 grams.

—An. Rept. Ohio Exp. Sta.

CONVULSIONS IN CALVES

I have encountered several cases of convulsions in calves—three lately all on one farm, one of which was seen by an attendant just as it was making the last struggle, one found dead in apparently the same circumstances, and the third had three or four convulsions a few minutes apart. I arrived on the premises just in time to see this one die. All three were calves in good condition, being fattened on cows for veal, and about ready to slaughter, being four to five weeks old. Suspecting poison, I had the stomach of one analyzed, but no trace of strychnin or other alkaloid was found. The organs all appeared normal on postmortem examination and there were no brain lesions. I saw a case of this a few years ago. A calf appearing normal when I went into the barn to treat a cow, started to run, had convulsions and died in a few minutes from no apparent cause. This was a veal calf to have been sold that day. The calves were confined in a pen except when fed, and others with them appeared normal at all times.—J. V. H.

Reply by J. F. DeVine. My tentative diagnosis of the cases you describe would be acute indigestion, but of course a positive diagnosis should not be made until we have eliminated other probabilities. You have eliminated strychnin poisoning, which is one of the things naturally that we would suspect.

I should next attempt to confirm or eliminate septicemia hemorrhagica.

I have practiced veterinary medicine in a dairy district for about thirty years, have been called in consultation in nearly every state in the Union, and have probably made more mistakes than any other veterinarian living; but I have learned that in the case of sudden death in calves there are many things to look for, and I never eliminate septicemia hemorrhagica without finding very positive proof of death from other causes or several negative findings in the case of blood examination. So by all means if you have more cases, have a bacteriological examination made of the blood and tissues. I suggest that you send the heart, lungs and liver to a laboratory as promptly as possible. If they must go any distance, have them packed in ice. Sawdust will aid materially in keeping the ice. There is the bare possibility of the necessity of examining the brain tissue, but personally I hardly think it necessary. There is also the possibility but not the probability of lead poisoning.

Septicemia hemorrhagica in calves is so common here in the east and manifested in such a variety of forms that we must regard it largely as we do the sick dog with no definite symptoms, but always the suspicion of distemper. Fortunately in the case of septicemia hemorrhagica, proper immunization with bacterins will give practically 100 per cent safety.

If the trouble in your case is due to acute indigestion, probably one of two conditions prevails. The calves are nursing a cow giving an unusually heavy milk, which is not probable, or nursing one that has been too long in milk to be a safe nurse cow.

Now as to acute indigestion, there was published an article under this caption in the March number of Veterinary Medicine, 1919. With the hope that it may help you or some others, I am asking the editor to publish it again.

CALCIUM CARBONATE IN EGG PRODUCTION

Calcium carbonate in a suitable form is about as essential as any other part of the ration for successful egg production. The poultry keeper's egg crop will be cut short about the same if he neglects to provide a suitable form of calcium carbonate as if he attempts to omit the protein concentrate such as meat scraps, milk, etc., from the ration for layers. While these results do not offer conclusive evidence as to the relative value of oyster shells and limestone grit the indications are that oyster shells are superior.

The fact that oyster shells are more relished by the fowls may be an advantage in that a greater intake results. Also the oyster shells are more readily pulverized than most grades of limestone. The question then arises, would it be an advantage to add finely ground limestone to the mash? The experimental evidence available indicates that the calcium carbonate for shell formation must be fed in form of grit or coarse material rather than fine. If fine material is put in hoppers the hens do not relish

it. At the same time the necessary amount could not be added to the mash without seriously interfering with the birds' digestive functions. It is questionable if more than 1 per cent calcium carbonate should be added to the mash, whereas 6 or 7 per cent would be required to meet the hens' requirement during egg production.—Monthly Bulletin, Ohio Experiment Station.

THE ABORTOSCOPE, A SIMPLE APPARATUS FOR THE DETECTION OF INFECTIOUS ABORTION OF CATTLE

This simple apparatus, which was evolved from the old method, rendered the application of the agglutination test so simple that it could be carried out in the field without reference to the laboratory, but with a considerable degree of accuracy.

The apparatus consists of a small test tube or phial, containing a suspension of the Bacillus abortus in a special diluent. This is closed by a cork into which is mounted a wire which extends downwards and terminates in a coiled loop, whereof the coils are sufficiently small and close together to exert capillary attraction and to gather the right quantity of blood for an agglutination test; that is to say, a dilution equivalent to one part of plasma to one hundred parts of suspension. It may be mentioned that the organisms used for the suspension have to be very carefully grown and tested as to their agglutinating powers, and are suspended in a solution which is so carefully adjusted that the whole blood can be used, thus obviating the separation of serum.

The method of using the apparatus is as follows:

The tube is vigorously shaken until the word "infected," printed on a label attached to the tube, can no longer be read through the contents. The suspected animal is then secured, and the margin of the ear is snipped with a pair of sharp scissors, or one of the veins of the ear is punctured with a needle, until the blood flows. The cork of the bottle is then withdrawn, and any liquid in the metallic loop is removed by blowing or shaking. The coils of the loop should be set slightly apart at an angle of about forty-five degrees. A drop of blood is then collected from the ear into the loop. This should form a globular bead about the size of a match-head, suspended in the loop.

The loop containing the blood is then inserted into the tube, which is carefully corked and vigorously shaken to completely mix the blood and the suspension. The tube is then placed in an upright position in a warm place for eighteen hours. If at the end of that time, or before, the word "infected" can be clearly read, that is to say, the solid contents of the tube have fallen to the bottom, leaving the supernatant fluid water-clear, the animal may be regarded as infected with infectious abortion. If there remains any opacity, the result must be regarded as doubtful or negative, and a further test should be made. As the contents of the tube deteriorate with keeping, the test should be made within six months of issue.

It is not claimed that this simple means of applying the agglutination test is infallible; it is merely intended as a rough-and-ready method to use under field conditions. In important cases, results can always be confirmed by more precise methods. It is hoped, however, that it may prove of use to the members of the profession by enabling them to test suspected animals themselves without delay and with a reasonable degree of accuracy, and so enable them to take appropriate steps for the control and elimination of the disease.—L. E. W. Bevan, M. R. C. V. S., in The Veterinary Journal.

THE TREATMENT OF SHIPPING SICKNESS OF HORSES WITH HEMORRHAGIC SEPTICEMIA SERUM

In February of the present year a shipment of twenty-six horses was received from the West; six became sick with what was supposed to be influenza soon after arrival. The usual treatment was given, but three animals died with acute pneumonia. It was decided to make a change in the treatment of the three still living. One of this lot was considered mortally sick at the time; both lungs were consolidated. Each of the three cases had the usual high temperature, frequent pulsebeat, loss of appetite and depression. They were each given 100 cc. of hemorrhagic septicemia serum intravenously. No other treatment was given. The worst case died soon after treatment was begun. One of the others developed purpura hemorrhagica and strangles, but made a complete recovery. The third case made a prompt recovery.

The twenty remaining horses were given 5 cc. of hemorrhagic septicemia aggressin as an immunizing agent and all escaped being sick. Results in this case were so surprisingly good that the writers decided to make observations on one hundred cases of shipping fever by treating them with hemorrhagic septicemia serum and at the same time to try aggressin on a similar

number of exposed but healthy horses. The treatment is no doubt empirical. It is possible that certain forms of so-called shipping fever are due to bipolar infection; if so, the treatment should be considered bacteriologically correct.

The differential diagnosis, course, complications and prognosis in shipping fevers vary considerably. No one is able to tell what may happen or what the outcome may be. Influenza is usually an insignificant disease in private stables where horses are acclimated and receive average care. An epizootic seldom occurs even though infected or sick horses are brought into it. The disease reaches its greatest importance in sales stables and under army conditions at the time of purchase. The well-defined plans for treating this disease in private stables do not appear to be applicable or practical under sales stable or army conditions. Many different remedies have been tried to prevent or cure this disease. In some cases results have been interpreted as useful, yet when the final word has been said such remedies have failed to convince those able to judge of their usefulness. Up to the present time there is no specific treatment for influenza or pneumonia either in man or the lower animals. For this reason we feel justified in experimenting with what may be considered empirical forms of treatment.

It should be mentioned also that the types of influenza vary with different years. The worst cases are usually expected during February, March and April, when sudden and extreme weather conditions are most often met. The last spring was not considered as bad as usual. For this reason it was decided to continue the experiment over a period of more than one year. From the results obtained so far, we judge that influenza with its numerous complications can be effectively and economically handled with hemorrhagic septicemia serum.—C. J. Marshall and W. J. Lee, University of Pennsylvania Bulletin, Vol. XXVI, No. 13.

Little is known of the cause, nature and treatment of epilepsy, however, it has been found that injections of anti-rabic vaccine gave good results in certain cases. They consisted of giving fifteen to thirty subcutaneous injections in one day, using 1 cc. dose of a 10 per cent anti-rabic brain emulsion (rabbit). This treatment was repeated in from one to four weeks. Epileptic seizures became less frequent after a few injections and the psychic condition was greatly improved. This method of treatment can be properly classed as protein therapy.

SKIN LESIONS IN CANINE DISTEMPER*

I agree that the presence of an abdominal eruption is characteristic of the canine distemper—not because of the frequency with which it is alleged to be found, but because, in the vast majority of cases where a vesicular eruption appears, other typical symptoms of distemper can also be apprehended, which leave no doubt about the diagnosis. In other words, when this peculiar eruption is encountered, it is practically always in association with distemper, and becomes in consequence characteristic of it. Nevertheless, I hold that it occurs both seldom and late, and cannot on that account be credited with any primary importance.

Two distinct opinions are current as to the diagnostic value and frequency of a skin eruption in this disease, each upheld by a formidable array of supporters, one school declaring that the eruption is of first-rate importance, Trasbot even going so far as to look upon it as a primary infection, all others being subsidiary; the other stoutly maintaining that, if it appears at all, it is of little or no significance. Gray, in his paper on "Canine Distemper" (Central Veterinary Society, 1905) gave it as his opinion that distemper is essentially an eruptive disease, and that bronchial pneumonia is entirely a secondary symptom. He quoted no less than fifteen observers who were agreed as to the eruption being present, and who pronounced it an "eruptive disease." Sewell, however (Veterinary Record, 1905), says: "I would like to state that in my experience, now extending over 30 years, it is the exception and not the rule for a canine distemper patient to have an eruption on the skin. In cases where it does occur it is generally noticed in young puppies." Mayall (Veterinary Record, 1905), added: "In my experience, distemper as a primary skin eruption hardly has any existence." McGowan (Veterinary Journal, 1912), remarked: "I have only seen the rash three times in 200 dogs, and it is not, in my mind, of the slightest importance in diagnosis, as it occurs so seldom, occurs late in the disease, and in a situation where irritation of fermenting urine and decubitus cannot be excluded as the most potent factors in its production." Ferry records only eight cases showing skin lesions out of 68 animals suffering with distemper; and my own clinical observations (extending now over 13 years and entailing the handling of probably some hundreds of distem-

* From discussion of "Clinical Aspects of Simple Distemper," The Veterinary Record, No. 52, Vol. 4.

per cases) are in entire agreement with the last-named gentlemen. A constant vigilance has been maintained for cutaneous no less than other lesions, but the results have been almost negative, since only about 8 per cent of cases of distemper have been found accompanied by a rash. Suggestions have been put forward that the eruption is frequently overlooked, or not observed, in consequence of the practitioner not, as a rule, being called in until the disease is far advanced, by which time the eruption has generally vanished; but serious objections can be raised to that theory in that (1) healing takes place with desquamation of the epidermis only after about seven to eight days from its onset at the earliest, and even then leaves discernible traces behind; (2) many veterinary surgeons who possess boarding kennels or infirmaries in which dogs remain for long periods, have ample opportunities of watching cases of sickness from their very inception, apart from those they visit at their owners' homes; and (3) in many instances the cutaneous symptoms are not manifested until at or near the termination of the primary malady. I knew a case in which a Pekingese puppy was the subject of an extensive rash for nine weeks, and eventually died.

It is held by some authorities that this eruption is the very earliest symptom of distemper, the spots appearing and disappearing within 48 to 60 hours; thus if the animal were not under suspicion they might well be overlooked. I can remember no cases of this kind, but have found skin lesions appearing for the most part during convalescence or about the crisis. In a very small minority of cases they have occurred in the absence of any symptom other than dullness and malaise, leading one to doubt whether distemper was implicated or not.—Hamilton Kirk.

EXERCISE HARMFUL IN CANINE DISTEMPER

Too many of our patients are lost during the convalescent stages of distemper by a misguided effort on the part of the owner, who imagines that exercise is beneficial. In a distemper patient any exertion is followed by increase of temperature and an extraordinary increase in the action of the heart. Distemper is an acute infectious disease, during the course of which we should remember that the whole of the energy of the patient must be directed to overcoming the effects of that infection—H. W. Dawes in The Veterinary Record.

In regard to vaccination against canine distemper, although perhaps we have not got the causal organism, we know that there are secondary organisms, and if the dog is inoculated against these it will help considerably.—G. P. Male in The Veterinary Record.

EYE LESIONS IN CANINE DISTEMPER*

What is the significance of eye lesions in canine distemper? Are they possibly specific to the distemper virus, or are they due solely to secondary infection? It is a point on which I must confess to having a leaning to the specific point of view. Conjunctivitis, keratitis, iritis, in fact, an inflammatory involvement of the whole of the eye may arise so suddenly as to point to a specific action, and again, in the case of keratitis associated with corneal ulcers, we meet with many outbreaks of distemper in which these arise quite suddenly with no premonitory warning.

One frequently meets with suddenly occurring ulceration of the cornea in dogs which by its progress points to an endogenous infection. In these cases there is great pain, depression and photophobia; in a very short time examination of the eye reveals a number of small vesicles grouped closely together on the cornea, which has a greasy appearance. These vesicles are followed at once by the formation of a corneal ulcer. During the whole of the time the dog is ill and shows the symptoms of an acute infection. These cases are, to my mind, only one phase of the distemper syndrome.

Gray has drawn attention to the fact in his translation of Nicola's Veterinary Ophthalmology, and other observers have pointed out that such a condition may be due to the action of toxins in the circulation. In my opinion, it is quite possible that these eye lesions may be actually due to the action of the specific virus of distemper, just as we find in specific eye lesions in equine influenza.—H. W. Dawes.

* From discussion of "Clinical Aspects of Simple Distemper," The Veterinary Record, No. 52, Vol. 4.

EFFECT OF LOW TEMPERATURES ON HATCHABILITY OF EGGS

Storage of eggs at a temperature of 32° F. for periods of 5, 10, 12 and 15 days did not materially affect the hatchability of hens eggs.

Eggs kept at 32° F. for 45 days and eggs exposed to temperatures between 28° and 32° F. for four days failed to show embryo development.

Methods of packing made no appreciable difference in results.

Chicks hatched from eggs kept at low temperatures develop normally.—Year Book, Missouri State Poultry Board.

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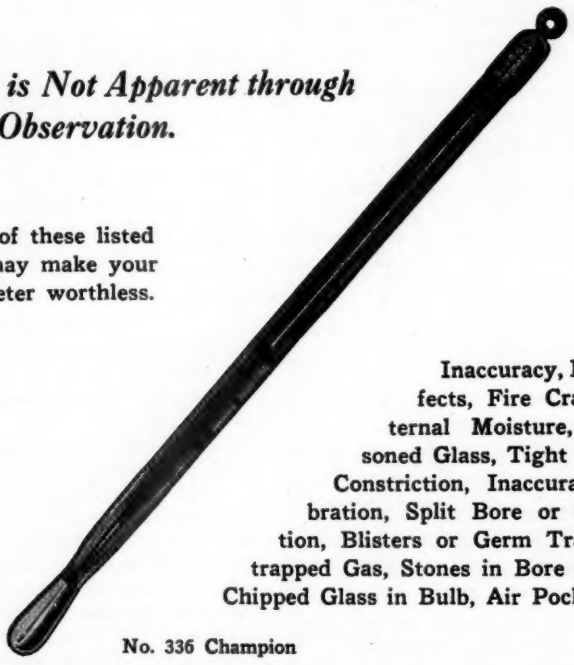

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CHANGES OF VETERINARY OFFICERS, REGULAR ARMY

1st Lieutenant John R. Ludwigs, Seattle Q. M. I. D., Washington, promoted to rank of captain, effective September 26, 1925.

1st Lieutenant Lester W. Ingram, relieved from duty at Presidio of San Francisco and directed to report to Commanding Officer, Fort Bliss, Texas, for duty on or about February 10, 1926.

2nd Lieutenant Ernest E. Hodgson, on temporary duty Front Royal, Virginia, relieved from duty at Medical Field Service School, Carlisle, Pennsylvania, and directed to report to Commanding Officer, Front Royal Q. M. I. D., for permanent duty.

Captain Stanley C. Smock assigned to duty at Presidio of San Francisco effective on completion of his tour of duty in the Hawaiian Department on or about February 6, 1926.

Captain Allen C. Wight relieved from duty at Fort Logan, Colorado, and from additional duty as attending veterinarian, Fitzsimons General Hospital, effective on or about October 15, and directed to report to Commanding General, Fort Sam Houston, Texas, for duty.

Captain Claude F. Cox assigned to duty at Fort Sam Houston, Texas, effective on completion of his tour of foreign service in the Philippine Department, on or about February 19, 1926.

Captain Seth C. Dildine relieved from duty at Fort Sam Houston, Texas, effective in time to sail on transport due to leave on or about January 27, 1926, for Philippine Islands, and directed to report to Commanding General, Philippine Department, for duty.

VETERINARY RESERVE OFFICERS

Additional Reserve Officers:

1st Lieuts:

Jespersen, Edward Christian, 1129 Fratney Street, Milwaukee, Wisconsin.

Kitzhofer, Joseph H., 210 Fenton Avenue, Grand Forks, North Dakota.

Williams, Clarence V., Box No. 55, Big Horn, Wyoming.

2nd Lieuts:

Boyce, McKeen, State Street, Vanport, Pa.

Paul, Haven Tilton, 290 Woodbury Avenue, Portsmouth, New Hampshire.

The twenty-ninth annual meeting of the United States Live Stock Sanitary Association will be held at the Hotel La Salle, Chicago, December 2nd, 3rd and 4th.

The midwinter meeting of the South Dakota Veterinary Medical Association will be held at Sioux Falls, January 28th and 29th. An interesting program is being prepared. Dr. C. C. Lipp, Brookings, S. D., is secretary-treasurer of the association.

Dr. F. R. Woodring, Secretary-Treasurer of the Nebraska State Veterinary Medical Association, announces that the coming annual meeting of that organization will be held in Omaha, December 8th and 9th.

The next meeting of the Mississippi State Veterinary Medical Association will be held at Greenwood, Miss., January 18th and 19th. Dr. C. G. Stallworth, Drew, Miss., is secretary-treasurer of the association.

The annual meeting of the Western New York Veterinary Medical Association will be held at Buffalo, N. Y., December 10th. Dr. F. F. Fehr is secretary and states a good program is being arranged.

BOOK REVIEWS

Veterinary Diagnosis and Treatment, by G. E. Jorgenson, A. B., D. V. M. Cloth, 341 pages. Price $3.50. D. Appleton & Co., Publishers, New York.

The system followed by the author in this book is to describe actual cases encountered in practice, giving date, patient, diagnosis, history and treatment, followed by a general discussion of the ailment in question. Of the 132 cases thus considered, 64 are in horses, 27 in cattle, 13 in swine, 16 in dogs, 5 in cats, 4 in sheep, and 3 in goats. No mention is made of poultry.

In the preface it is stated that the work has been compiled from the author's records of some 1200 cases observed and treated during the past ten years. The selection from such data presented in this volume has been arranged into eight chapters with the following general classification; diseases of the respiratory organs, circulatory organs, urinary organs, digestive organs, cerebrospinal system, blood, contagious diseases, and miscellaneous diseases.

About 100 different diseases and conditions in various animals are dealt with, and thus while the work cannot be said to be a complete and exhaustive consideration of the subject, yet the unique manner of making actual cases the center of discussion will appeal to the practitioner, who will find much in the volume that is worthy of perusal.

The Diseases of the Cat and Its General Management, by Hamilton Kirk, M. R. C. V. S., F. R. S. M. Cloth, 418 pages, 63 illustrations. Price $3.50. Published by Bailliere, Tindall & Cox, London. American representative, Alex. Eger, 9 S. Clinton St., Chicago.

This is without doubt the most extensive and thorough work on diseases of the cat that has been published to date. The contents comprise twelve chapters, in which are considered the signs of good health; old age and its influence upon health; diseases of the respiratory system; digestive system; nervous system; skin; specific diseases such as distemper, tuberculosis, infectious enteritis, diphtheria, rabies, coccidiosis, etc.; diseases of the ear; eye; urino-genital system; miscellaneous diseases such as peritonitis, ascites, carcinoma, hydrothorax, hernia, jaundice, etc.; toxicology and posology; anesthesia and euthanasia. Each disease is considered with reference to cause, symptoms, prognosis and treatment.

In addition, there are three appendices dealing with the history and characteristics of the cat tribe, general management. and management of the sick.

The following is quoted from the author's introduction:

"Cats laboring under disease require a great deal more care and consideration than is generally realized to ensure their recovery, and the haphazard methods which were common twenty or even ten years ago have now given place to highly scientific observance of detail, and a care and precision founded upon a much more skilled knowledge of feline pathology and a closer emulation of the methods employed in human medicine. The poor cat suffers only too frequently from the ignorance or neglect, or even excessive attention, of its owner, and this may be especially true in questions concerning disease.

"The cat is a most difficult patient, for when sick it becomes morose and obstinate, instinctively resents any interference, loves obscurity, and usually refuses to take any food. It cannot tolerate pain for any length of time, and appears rapidly to lose heart and strength. Diagnosis is always difficult, for they usually betray few signs (if any) of their condition until in extremis, other than to sit huddled up for hours together with head down and eyes closed. It must be admitted, too, that cats seldom seem to realize that what is done is intended for their benefit. On the other hand, one feels convinced that many dogs do realize this, for the writer has known numerous instances in which old pa-

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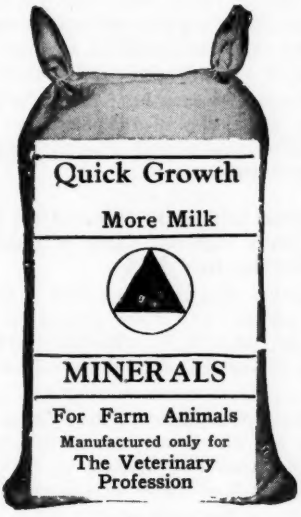

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tients have run into the surgery, barked, wagged their tails, and sometimes held up a paw which had previously undergone some minor operation.

"There are some maladies against which the cat appears to possess immunity. The following is a list of diseases which either never occur in cats, or do so only on exceedingly rare occasions: Rickets, osteomalacia, osteoporosis, interdigital cysts, acne, urticaria, seborrhea, rheumatism, diabetes, chorea, specific parotitis, tetanus, phimosis, paraphimosis, hydrocele, and bronchocele. Cats are also immune from snake poisoning; in fact, they are snake killers. The world has every incentive for studying the diseases of the cat, for no other animal is its equal as a destroyer of vermin, and in exercising this power the cat is an important auxiliary to the preservation of the health and wealth of man."

It is impossible in a brief review to give an adequate impression of the excellence of the book. The volume itself must be read to be fully appreciated.

Directions for the Dissection of the Cat, by Robert Payne Bigelow. Cloth, 47 pages. The Macmillan Co., New York.

The author states that this book is primarily written for use in college courses in human physiology, since in its essential features the body of the cat is very similar to the human body.

Complete, detailed instructions are given for carrying out the dissection step by step on a single specimen, thus leading to economy of material as well as aiding the student in getting a clear idea of the organism as a whole.

Veterinary students and practitioners, especially those taking up small animal work, will find the book of value in their study of anatomy and dissection and for postmortem examination.

Laboratory Manual in General and Pathogenic Bacteriology and Immunity, by V. A. Moore, M. D., V. M. D., and W. A. Hagan, M. S., D. V. M. Cloth, 264 pages, 39 illustrations. Price $2.00. Ginn & Co., Boston.

This book is intended for veterinary students, the authors having embodied in it their long experience in the teaching of bacteriology. Part I deals with general bacteriology, and Part II with pathogenic bacteriology and immunity. The latter section is entirely new. The first part has been revised, rewritten and expanded from Dr. Moore's "Laboratory Directions for Beginners in Bacteriology," first published in 1898 and the last edition in collaboration with Dr. C. P. Fitch in 1914.

The manual is specific in telling the student what to do and how to do it, also explaining why it is done. The volume contains 65 exercises, each followed by a list of questions for the student to answer. The most up-to-date and approved methods as well as the newest nomenclature, are embraced in this work, which represents the latest text of its kind in bacteriological instruction.

AUSTRALIAN VETERINARY JOURNAL

The third number (September) of the Journal of the Australian Veterinary Association, in size and quality, is well up to the first issue, mentioned at some length in these columns several months ago.

Evidence that the problems of veterinarians on the other side of the world are little different from our own, is seen in the subjects discussed in this new journal. In this issue we find Sterility in the Mare, Endometritis, Treatment of Retained Placenta, The Cause of Botulism in Animals, Calmette's Ophthalmic Tuberculin Test Applied to Pigs, Fluke Disease, Enzootic of Tetanus in Rams, Tuberculosis in a Mare, etc.

It is announced that the next issue (December) will be devoted to canine matters.

THE CALIFORNIA VETERINARY CONFERENCE

University Farm, Davis

Tuesday, January 5, 1926

F. M. Hayes, Chairman

Morning

11:00 California Plants Poisonous to Live Stock (Illustrated), W. W. Robbins.

Afternoon

1:15 Demonstrations:

(a) Identification of External and Intestinal Parasites of Dogs and Cats by Microscopic Examination, S. B. Freeborn and T. I. Storer.

(b) Use of the Otoscope, F. H. McNair.

(c) Use of the Glass Speculum and Illumination of Os Uteri, E. H. Barger.

(d) Miscellaneous Demonstrations, R. M. Bell and E. M. Dobbs.

2:20 Exhibit of Results of Live Stock Breeding at University Farm, Staff of the Animal Husbandry Division.

3:50 Bovine Surgery:
Lecture and demonstration using forma-

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Can Now Be

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Canine Distemper Antigen

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lin-hardened specimens, R. R. Dykstra.

Evening

7:30 The Present Status of Foot-and-Mouth Disease (Illustrated by motion pictures), Rudolph Snyder.

8:00 Filterable Virus Vaccines (Illustrated), W. H. Boynton.

8:30 A Possible Plan for Demonstration Work by Practitioners in the Control of Bovine Infectious Abortion, G. H. Hart.

Wednesday, January 6, 1926

A Southern California Practitioner, Chairman

Morning

8:30 Telegony, F. M. Hayes.

9:20 Differential Diagnosis and Control of Hog Cholera, Hemorrhagic Septicemia and Necrotic Enteritis in Swine, P. C. Guyselman.
Discussion led by W. H. Boynton.

10:10 Poultry Practice Demonstrations, J. R. Beach and D. E. Davis.

11:00 Swine Surgery—Lecture and chart demonstration, R. R. Dykstra.

Afternoon and Evening

Adjourned meeting, California State Veterinary Medical Association, at Sacramento.

Thursday, January 7, 1926

C. M. Haring, Chairman

Morning

8:30 Important Facts Regarding Calf Hygiene, G. H. Hart.

9:20 Dairy Inspection and the Veterinarian, J. J. Frey.

10:10 Address—Subject and Speaker to be announced.

10:50 Vitamin E and Animal Fertility, H. M. Evans.

Afternoon

1:15 The Estrous Cycle, H. M. Evans.

2:30 Points Regarding the Breeding of Cattle, W. M. Regan.

3:30 Section of Thyro-arytenoid Ligaments in the Goat, C. A. White.

4.00 Surgical and Therapeutical Suggestions for Small Animal Practitioners, R. R. Dykstra.

Evening

7:30 Biological Research in Relation to the Evolution Controversy in America, C. A. Kofoid.

8:30 Progress of the National Campaign to Control Bovine Tuberculosis, J. A. Kiernan.

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The Remedy for
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Friday, January 8, 1926

David Fox, Chairman

Morning

8:30 The Estrous Cycle of the Cow (Illustrated), C. M. Haring.

9:20 How Practitioners Have Helped in Tuberculosis Eradication, J. A. Kiernan.

9:50 Progress in Control of Tuberculosis in California, J. P. Iverson.

10:50 Canine Dentistry, C. A. White.

Afternoon

1:00 Two Years of Progress in Experimental Medicine, K. F. Meyer.

2:30 Operative Technic in Certain Cases Presented by Request, R. R. Dykstra.

KANSAS VETERINARY MEDICAL ASSOCIATION

The twenty-second annual meeting of the Kansas Veterinary Medical Association will be held in Topeka, Jan. 6 and 7. The program committee has worked hard and untiringly in arranging this program and we have the promise of the best meeting ever held in Kansas. The following is a copy of the program:

Address of Welcome, Mayor James E. Thomas.

Response on behalf of K. V. M. A., Dr. R. R. Dykstra, Manhattan.

Address by the President, Dr. I. J. Pierson, Lawrence.

Reading and Approval of the Minutes of the Last Meeting, Dr. Chas. W. Bower, Sec.-Treas., Topeka.

Reports of Committees.

Tuberculosis and Its Relation to Public Health, Dr. M. P. Ravenal, University of Missouri.

Tuberculosis Testing, Tuberculosis Reaction and Reactors, Dr. F. F. Brown, Kansas City, Mo.

Sterility in Cows, Observations, Preventions and Eliminations, Dr. S. L. Stewart, Olathe.

Ovarian Deficiency, Experience in Practice, Cause and Treatment, Dr. L. E. Bruncher, Mulvane.

Uterine Diseases, Causes and Treatment in Cows, Dr. Albert Wempe, Maryville.

Mammitis, Cause and Treatment in Cows, Dr. C. B. Kern, Beloit.

Benefits Derived from the Use of Vaccines and Bacterins, in Sterility, Uterine, Ovarian and Mammary Diseases, Dr. Frank Breed, Kansas City, Mo.

Radio Talk—The Progress of Veterinary Medicine, Dr. I. J. Pierson.

A good dinner served at 7:00 p. m. Good

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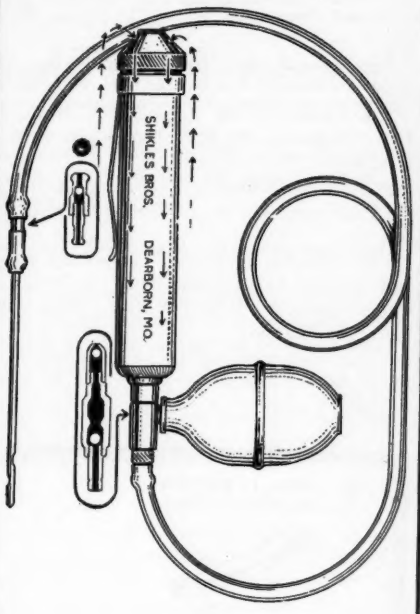

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The bulb is a high grade rubber and can be replaced at a low cost.

The udder can be inflated without tiring the hand.

The valve at the end of the tubing is constructed so that any common milk tube can be used, and also milk cannot flow back into the tubing.

The veterinarian cannot afford to be without this outfit.

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talks. Lots of fun. Fine music and a big dance. An excellent time for the laity to find out what we are and what we are doing.

Toastmaster, Dr. A. H. Gish.

After Dinner Speakers: Governor Ben Paulen, Mr. Clyde Miller, Major R. J. Foster, Dr. E. F. Kubin.

Nutritional Diseases, Causes, Diagnosis, Treatment and Prevention, Dr. A. T. Peters, Peoria, Ill.

Anaplasmosis, Dr. Paul D. Darlington, Chanute.

The Future of the Veterinary Colleges and Their Graduates, Dr. R. R. Dykstra, K. S. A. C., Manhattan.

Present and Future of Veterinary Science and the Profession, Dr. A. T. Kinsley, Kansas City, Mo.

The Function of a State Veterinary Service and Proper Relationship with the Practicing Veterinarian, Dr. Homer Wilson, State Veterinarian of Missouri.

X-Ray and Fluoroscope as an Asset to the Small Animal Practitioner, Dr. Chas. W. Bower, Topeka.

Election of Officers: President, Vice-President, Secretary-Treasurer and one member of the Executive Board.

A fine program and clinic will be given on both large and small animal practice. All city and most rural practitioners are finding small animal practice rapidly increasing along with their general practice and their services constantly more in demand than ever before.

A Lecture on Small Animal Practice, including Demonstrations and Surgical Operations, Dr. E. L. Quitman, Chicago, Ill.

Flynn's Method of Spaying Bitches and Demonstrations of Spaying Instruments, Dr. J. C. Flynn, Kansas City, Mo.

Devocalization of Dogs and Demonstration of Instruments, Dr. J. V. LaCroix, Chicago, Ill.

Spaying Heifers, Actual Demonstrations, Drs. Gaines, Concordia, and Gale, Clyde.

Dental Operation, Actual Demonstration, Horse, Dr. A. H. Gish, El Dorado.

Teat Operation, Actual Demonstration, Cow, Dr. S. L. Stewart, Olathe.

Blateomy in Goat, Actual Demonstration, Dr. F. R. Allerton, Hamlin.

Chas. W. Bower, Sec.-Treas.

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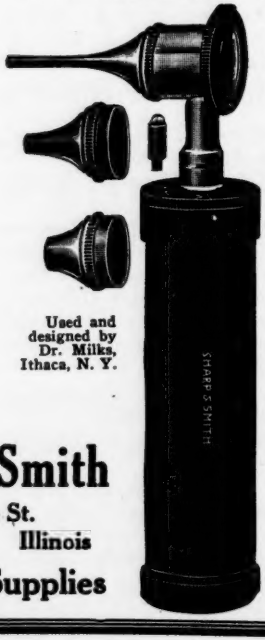

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By Professor Dr. George Muller, Director of the Clinic for Small Animals at the Veterinary High School at Dresden, and Alexander Glass, A. M., V. S., for 24 years Lecturer on Canine Pathology in the University of Pennsylvania.

Fifth Edition Translated by Dr. A. A. Leibold, Dr. Paul Fischer and Alexander Glass

The authors, equipped by extensive clinical practice and experience in Europe and America, have produced what has long been the recognized work on the subject. The leading colleges in every English-speaking country have recognized its value as a text-book and adopted it, and it has received the approval of veterinarians generally.

Every detail in the diseases of the dog is carefully considered and presented in a clear, concise form. Diagnosis is given a prominent place, and the relations of symptoms to a disease established in a way that makes possible accurate knowledge and a plain definition of the disease.

This new edition has been brought thoroughly up-to-date, having been revised and reset and over 250 pages of new matter not in previous editions added. This enlargement makes the present volume one of about 700 pages, with 260 illustrations, many of them in color and five insert plates. It is printed on fine enamel paper and bound in silk. The price of the book when ready will be $6.00 or $6.50.

Special Advance Order Offer

On advance orders received before January 1, 1926, a special price of $4.50 will be made. After that date the regular price of $6.00 or $6.50 will apply.

Order now and make this material saving in the cost of this book, because it is a volume indispensable to you if you are at all interested in canine practice.

As an additional special inducement to obtain orders during December, we will prepay transportation charges on the book.

VETERINARY MAGAZINE CORPORATION

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FOOT-AND-MOUTH DISEASE

The campaign in Texas against foot-and-mouth disease has not been attended with any untoward development recently. That the outlook is excellent is evidenced by the following statement which is quoted from a joint letter signed by Dr. N. F. Williams, State Veterinarian of Texas, and Dr. Marion Imes, Bureau inspector in charge:

"No new cases have occurred since October 14. The last case was in a dairy herd of 115 cattle, and only one cow showed lesions. She was killed and burned as soon as the diagnosis was confirmed. The remainder of the herd was promptly destroyed.

The last case on the range was disposed of on October 6 near Webster, well within the closed area. There have been no cases near the borders of the closed area for over thirty days. The situation is well in hand, and the indications are that the disease has been eradicated."

In view of the complaints and criticisms that we frequently hear concerning the slaughter method of combating foot-and-mouth disease, and the assertions sometimes made that we should quarantine and treat diseased herds as they do in Europe, you will be interested in knowing that the commission which we sent to Europe to study this disease is convinced, after spending several months in observing the measures employed over there, that our policy is the proper one for this country. The commission, in a recent report, makes the following pertinent statement on this subject:

"* * * * * we desire to emphasize that at this writing we are of the opinion more than ever before that the U. S. should do all in its power to prevent the disease from getting a foot hold, and thus becoming enzootic, as it is now in continental Europe.

"In Europe they are simply up against it, * * * * *. Some countries like Switzerland and Sweden make strenuous efforts to keep the disease in check in spite of all obstacles, while the majority of countries visited feel that they can do no more than impose a very ineffective quarantine and take the consequences.

"It is extremely doubtful whether it would be possible with the severest form of quarantine to prevent an extensive spread of the disease to

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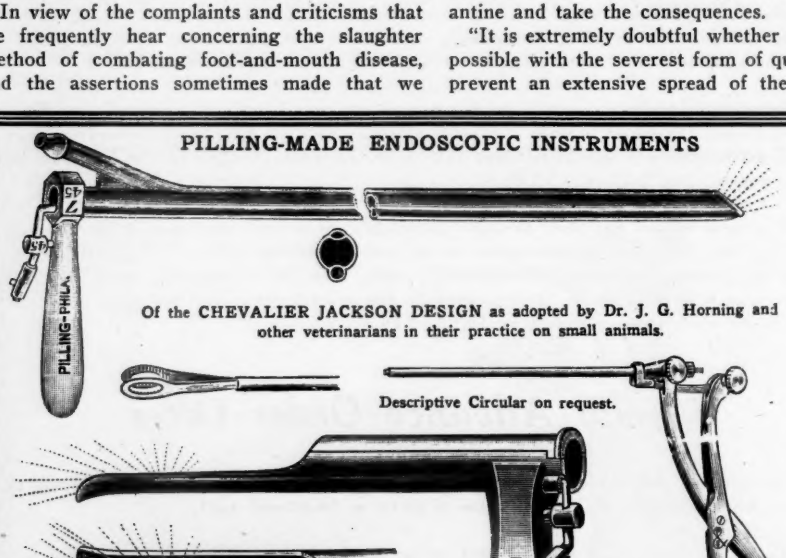

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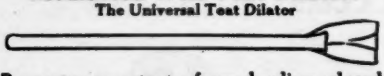

Prevents sore teats from healing closed. Always use in teats after operating. Never allow a cow's teat to gum shut or scab over. Medicated Wax Teat Dilators will prevent this. No trouble to keep them in teats between milkings. They are healing and antiseptic.
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practically all parts of the United States.

"Switzerland enforces very strict quarantine measures, in some instances covering large territories. In such communities, the people are prohibited from having direct intercourse with free areas. Food, mail, and other necessities of life are brought to them by special officers, for eight weeks after the recovery of the last case. In the United States the direct cost of similar methods would be tremendous and the indirect cost to the farmers and other interests would be staggering and would be many times the cost of our present methods.* * * * *

"European officials with whom we have discussed methods of combating foot-and-mouth disease agree that situated as we are and the disease limited to only a comparatively small percentage of animals, the slaughter and clean-up method is the only effective one and is the most economical. They can not adopt this method because the disease is so widespread all over Europe that slaughtering would be futile in most cases on account of their geographical situation.* * * * *

"Until more definite information is at hand to point out under which condition the virus is soon destroyed, and which are the conditions which make it possible for the virus to remain active, and point out which animal may and which does not harbor the infection, we must consider that all recovered cases are possible carriers, even if the percentage of such cases is small and we must consider that virus may live a considerable length of time outside of the animal body under some conditions, and we must continue our methods of eradication while it is still possible to do so. Otherwise we will find ourselves in the same condition as Europe and South America find themselves, saddled with the foot-and-mouth disease."

The only conclusion that can be drawn from this statement is that until the pathology of foot-and-mouth disease is better understood, the slaughter method is the only practicable one for this country.

J. R. Mohler
Chief, B. A. I.

DEATH OF DOCTOR BENJAMIN D. PIERCE

Dr. Benjamin Dwight Pierce, 66, died suddenly on November 4th at his home in Springfield, Mass. For the past 35 years he was state veterinarian for the district of Western Massachusetts and for 23 years municipal inspector of animals, slaughtering and food for the city of Springfield. His reputation as a veterinarian was country-wide, and his services were sought not only by the local and state governments but by the federal and the British governments as well.

Dr. Pierce could trace his lineage back to colonial days, being a direct descendant on the maternal side of John Mack, who emigrated to this country in 1669 from Iverness, Scotland, and of Col. Daniel Mack, a soldier in the war of the revolution. He was born at Worcester, Mass., March 9, 1859. He moved to Springfield with his parents when a year old. After passing through the grade and high schools, he studied veterinary medicine at McGill University at Montreal, Canada, graduating there in 1881 with high honors. A scholarship won in competition with 300 students, enabled him to take a post-graduate course at the Royal College of Veterinary Surgeons at Edinburgh, Scotland, where he took his degree in 1882.

Returning to this country in that year, Dr. Pierce became veterinarian for the 5th U. S. Cavalry, then stationed at Fort Reno, Arizona. While serving in this capacity, he was an eye-witness to the thrilling events which marked the opening of 10,000 square miles of land in Oklahoma to homesteaders on April 22, 1889. After leaving the cavalry service, Dr. Pierce served the New York Street Railway Company as veterinarian, safeguarding the health of the thousands of animals that drew the horse cars through the streets of the metropolis.

He resigned this position in 1890 to accept appointment as state veterinarian for the district of Western Massachusetts, a position which he filled up to the time of his last illness.

In 1900, while the British and the Boers were at war in South Africa, Dr. Pierce was commissioned by the British government to purchase 10,000 mules and horses in this country for transport to the scene of war. The commission was successfully executed, several shiploads of Missouri mules being sent overseas. Dr. Pierce

took passage on the last ship, remaining in Africa for sixteen months and making an extensive tour through the country.

Returning to Springfield in 1902, Dr. Pierce resumed his practice as a veterinarian. In that year he was appointed municipal inspector of animals, slaughtering and food. He resigned the office a month ago, after rendering the city most capable service for nearly a quarter of a century.

In 1917, the year when the United States entered the World War, Dr. Pierce was commissioned by the federal government to undertake research work in Florida on the causes and cure of hog cholera. While engaged in this work, he gave a series of lectures before scientific and agricultural bodies. Mrs. Pierce accompanied her husband on this trip. They made their home at Arcadia, Fla. In 1918 Dr. Pierce again resumed his practice in Springfield.

Dr. Pierce was a charter member of the Massachusetts Veterinary Medical Association, a member for 42 years of the A. V. M. A. and a member also of the Connecticut and New York veterinary associations. He held membership in the Sons of the American Revolution and in the Connecticut Valley Historical Society, was an honorary alumnus of Cornell University and a past president of the Quoin Club. He was a 32nd degree Mason and a Shriner. He was also a member of the Odd Fellows and a lifelong member of the Church of the Unity.

Dr. Pierce was a horse lover and one of the best known horsemen in the Connecticut valley. His knowledge of race horses was extensive, and he numbered among his warm friends the owners and drivers of many of the largest stables in America, to whom he was affectionately known as "Uncle Benjamin."

Dr. Pierce leaves his wife and a son, Dr. J. Dwight Pierce of Boston, assistant state veterinarian. The funeral was held November 7th, the body being cremated.

Dr. John T. Crosby, M. R. C. V. S., who had been in practice in Kansas City, Mo., for several years, died of apoplexy, November 9th.

Dr. C. Pedrick, Dr. C. R. Walter and Dr. W. R. Peeler were official veterinarians for the fourth annual dog show of the Tulsa Kennel Club held at Tulsa, Okla., November 27th, 28th and 29th.

Dr. M. C. McClain of Jeromeville, Ohio, died on October 9th, following a gastro-enterostomy.

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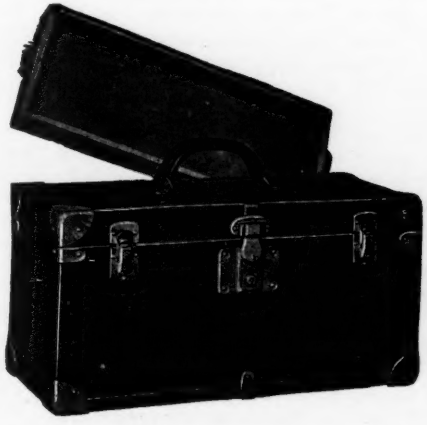

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Dr. R. Armstrong and Dr. O. A. Taylor have gone into partnership in practice at Detroit, Mich.

Dr. B. C. McLean has changed his location from Erie, Pa., to Aiken, S. C.

Dr. Philip Ritter, formerly in the serum business at Kansas City, Mo., is now engaged in general practice at Gashland, Mo., where he has five acres for small fruit and chickens.

Dr. H. P. Waddle has moved from Trenton, N. C., to Suffolk, Va.

Dr. H. L. Darby, U. S. B. A. I. supervisor of livestock at San Antonio, Texas, has taken over the duties of Dr. H. L. Allen at Ft. Worth, Dr. Allen has been promoted to traveling inspector for the southern states.

Dr. Edwin Hogg, 65, of Wilkes-Barre, Pa., died on October 28th, following two weeks of illness. He was born in Kirkwood, Pa., and came to Wilkes-Barre twenty-seven years ago. He was recognized as a veterinarian of great ability and was chief veterinarian for a number of large concerns. His nephew, Dr. Ernest Hogg, was associated with him in the veterinary practice firm of Hogg & Hogg. He was an active member of the national and state veterinary associations. He is survived by his wife, a daughter, two sons and a granddaughter.

Dr. James B. Wilson has moved from St. Croix Falls to Augusta, Wis.

S. L. Jackson, receiver for the American Veterinary Supply Co. of Kansas City, Mo., filed suit in the circuit court against the Missouri Valley Veterinary Association, November 5th. The suit asks for $100,000 damages because of a resolution the association is said to have adopted criticizing the company.

Dr. M. Donahoe has moved from Breda to Milford, Iowa.

Dr. C. G. Glendenning has sold his practice at Clinton, Ill., and states he never expects to clean another cow or vaccinate another hog. He is enjoying the warm salt ocean swimming at Fort Lauderdale, Fla.

Dr. A. E. George of Perry, Mich., is a first lieutenant in the 119th field artillery, Michigan National Guards, and also regimental veterinarian. He reports that last August the regiment went overland from Sterling, Mich., to Grayling, Mich., a distance of seventy miles, taking along a total of 558 horses which were used both for riding and draft purposes. Guns of the 75 mm. type, tentage and all other equipment were transported. The column was over a mile long. Camp was made each night and the men fed from rolling kitchens. A field hospital was erected each night and taken down in the morning and all emergency cases were taken care of in the line of march. A total of 114 cases in horses were treated on this march with a loss of five animals, which is a good showing, as 324 horses were green, never having been worked under saddle before, and most of the 600 men were also new recruits. Dr. George states that the only trouble they had in getting started was with the rolling kitchens which were motorized. One morning after a heavy rain, all the trucks had to be drawn out to the road with horses, which speaks very well for the horse as motive power in time of war. The trip was made on schedule time, and men and horses came out of it in good condition considering the inexperience of both.

While Dr. J. F. DeVine of Goshen, N. Y., is an authority on cattle and cattle diseases, he also maintains an interest in the horse, still driving a trotter occasionally and riding to the hounds, as well as judging at many horse shows. During the past season he judged at the Pinehurst Horse Show, Pinehurst, N. C.; Polo Club Horse Show, New York City; Tuxedo Horse Show; Batavia Horse Show, Batavia, N. Y. He was superintendent of the horse department and chairman of the horse show committee of the Orange County Fair Association, and superintendent of the draft horse and breeding department at the New York State Fair.

The case report on open joint and open bursa by Dr. S. J. Murray, Le Sueur, Minn., which won first prize in the September contest of Veterinary Medicine, was reproduced in its entirety in the October 3rd and 10th issues of The Veterinary Record, London, England, the official journal of the National Veterinary Medical Association of Great Britain and Ireland.

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A quarter of a million wild horses, ranging on the wild lands of the Pacific Northwest, are to be rounded up, sent to Portland, Ore., and rendered into fertilizer and soap fats. The wild horse in Eastern Oregon, Washington, Idaho, Montana and Nevada, has been a problem to state officials, the humane societies and livestock men for years. These mustangs, inbred, small and useless, have been multiplying by the thousands on the range since the automobile reduced the demand for small horses. They eat tons and tons of feed each year and die off in dry summer and the cold winter by the hundreds. According to Dr. E. E. Chase, city veterinarian of Junction City, Ore., the removal of these wild horses from the ranges will eliminate one of the greatest sources of contagion to domesticated animals as the wild herds are constantly ravaged by distemper, mange, glanders and similar diseases. The wild horses are tough and immune but when the contagion spreads to domestic herds it wipes out thousands of animals.

Dr. F. M. Hayes, University of California, has sent in a notice of the death of the wife of Dr. Oscar J. Kron of San Francisco. Mrs. Kron died on October 15th after an illness of one week.

Dr. M. R. Sebright located in practice at Hartington, Neb., October 1st. He was formerly at Crofton, Neb.

Dr. Robert L. Biggs has changed his location from Athens to Waycross, Ga.

Dr. W. E. Russell sold his practice at Lowell, Wis., to Dr. L. A. Wright, last September, and now holds the position of director of laboratories of the Rusch Fox Breeding Estates at North East, Pa. Dr. Russell states that the fox ranch also conducts a school in connection with the laboratories, comprising an eight-months winter course for the benefit of "embryo" fox ranchers who are not experienced in the rapidly growing industry of silver black fox breeding. The course consists of breeding, feeding, sanitation, practical management and ranch construction. The school attracts a large number of students, and Dr. Russelll says they remind him sometimes of his class in the old Chicago Veterinary College.

Dr. W. W. Pease of Meadville, Pa., reports that he has just completed the construction of a new small animal hospital of concrete, well lighted, ventilated and steam heated. In addition to conducting his practice, Dr. Pease is also dairy and food inspector for his city.

Dr. J. H. Yarborough, formerly at Denmark, S. C., is now located at Miami, Florida.

Dr. Wm. Payton, formerly at Lewis, Kan., has taken over the practice of Dr. George Murphy at Savonburg, Kan.

Dr. R. C. Dickson has changed his location from Corder to Jefferson City, Mo.

Dr. S. D. Graumlich has moved from Groveport to Circleville, Ohio.

Dr. Fred J. Lizana is now located at Pass Christian, Miss.

Dr. P. J. Spain, formerly at Casey, Iowa, gives his new address as Fulton. S. D.

Dr. Bruce D. Kennedy, who conducts a small animal hospital at Ottawa, Ontario, reports that he is finding business real good.

Dr. Clarke Hedley of the B. A. I. on tick eradication work at Conway, S. C., has been transferred to meat inspection at Philadelphia, Pa.

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Used as a bath (five per cent solution) it CLEANSES the skin, imparts LUSTER to the coat, KILLS FLEAS, and leaves a delightful odor.

For any form of cleansing and for every kind of room or building it at once wins favor. By adding two ounces of SOLUPINOL to a gallon of hot water NO SOAP is necessary. It will cut dirt without corroding metal or dimming polished wood with a soothing rather than an irritating effect upon the hands.

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GOSHEN, N. Y.

Dr. J. Tunnicliff, of the University of Illinois, spoke on poultry diseases at a meeting of the Rock River Valley Veterinary Association held October 17th in the offices of Dr. S. R. Kennedy & Son, Moline, Ill. Thirty-six veterinarians of Rock Island, Henry and Mercer counties were present.

Dr. Russell Fortney has gone into partnership in practice with Dr. W. W. Hyde at Wellington, Ohio.

The following officers were elected at the meeting of the Utah Veterinary Medical Association, held at Salt Lake City, October 2nd: Dr. Oscar Winnergren, Logan, president; Dr. Arthur Vance, Provo, vice president; Dr. E. A. Bundy, Ogden, secretary-treasurer. This is Dr. Bundy's seventh term in office.

Dr. G. J. Huenink died at his home at Cedar Grove, Wis., October 28th. He was born in the Netherlands and came to this country when he was three years old, since which time he had lived in the vicinity of Cedar Grove. He graduated from the Chicago Veterinary College in 1891, after which he practiced for twenty-five years, retiring from active work about ten years ago. He was widely identified with the advancement of his village and township and had a big part in the social affairs of the community as well as in the business affairs. He served as clerk of the township of Holland a number of years, was chairman of the town board, and for many years, clerk of the school district in which he resided. He was director of the Cedar Grove State Bank for more than fifteen years and at the time of his death was president of the Dutch Canning Co., as well as president of the Holland Mutual Insurance Co. He is survived by his wife, twelve children, three brothers and a sister. Among the veterinarians present at the funeral were Dr. J. Cevaal of Oostburg and Drs. H. A. Arpke and L. C. Tasche of Sheboygan.

The Iowa Veterinary Association will hold its annual meeting at Des Moines, Feb. 2, 3, 4, 1926, and the short course for veterinarians at the Iowa State College, Ames, will be held February 5th. Dr. E. R. Steel, Grundy Center, Iowa, is secretary of the association.

Dr. H. H. Seely, formerly at White Hall, Ill., has accepted the position of county veterinarian for Jersey County with headquarters at Jerseyville, Ill.

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MEETING OF THE GEORGIA ASSOCIATION

The nineteenth annual meeting of the Georgia Veterinary Association passed into history at Brunswick, on September 7, 8, and 9, 1925. For an enjoyable meeting, it will be hard to beat. In spite of the extreme drought that has prevailed over the greater part of Georgia, there was a remarkably large attendance. The papers were good, and brought out much interesting discussion. Informal case reports and discussions were numerous.

The meeting was presided over by Dr. J. E. Severin, and was opened by an address of welcome by Fred G. Warde, Manager of the Brunswick Board of Trade. This was also a historical review of those points of interest which had great bearing on the development of Georgia and the whole United States, from the time when this section was first settled by Oglethorpe and his English colony, through their wars with the Spanish and the Indians for possession of the Southeast, to the present day. In this talk, the history of the battle of Bloody Marsh, where Oglethorpe fought the Indians, Ft. Frederica, the oldest fort in America, and Wesley Oak, under which the Methodist church was organized by John Wesley, was refreshed in the memories of Mr. Warde's listeners. It was an interesting talk, and a genuine welcome, and was responded to by Dr. A. L. Hirleman of Atlanta.

The second day of the meeting was given over to a boat trip of 50 miles, to the city of Fernandina, Florida, on Amelia Island. All members present, together with the ladies, left Brunswick on the little steamer, "Emmaline," for that interesting little island of Florida. Refreshments consisting of so-called beer, pretzels, shrimp and bottled soft drinks were on board and well attended.

This was a very interesting as well as instructive trip. The route taken passed many notable islands, among which was Jekyl Island, where a group of Northern men have their winter hunting preserves. Big Cumberland Island, which is in possession of the Carnegie estates, was seen on this inland route. On Big Cumberland was seen the four large homes of the Carnegie families. Of these, probably "Dungeness" is the largest. The immense castle, of about 200 rooms, on this estate, was once the home of the widow of the late Andrew Carnegie, and she now lies buried near this castle.

Large fleets of prawn or shrimp and pogy boats were seen in the waters around Amelia Island.

We reached Fernandina about 12:30 o'clock and were met at the wharf by the Fernandina Automobile Club. These gentlemen carried us to the Keystone Hotel, where a splendid lunch, given by the Fernandina Chamber of Commerce and the hotel management, was served us. After lunch, the automobile club again took us in charge and showed us the wonderful sights on Amelia Island. And I might say, in passing, that not once did these men broach the subject of buying real estate on the Island. Theirs was a genuine hospitality that would naturally reap its own reward. This island is only about 18 miles long by 2 miles wide. We were carried over Amelia beach, which is about 18 miles in length, and as fine as can be found on the coast. During low tide it can be traversed almost its entire length by automobile.

The boat was again boarded about 4:00 o'clock, and an interesting return trip begun. This trip was made more interesting to all, and exciting to many, by the fact that, due to low tide, darkness and the narrow channel through Jekyl Creek, the boat ran aground in the shallow water. Here we were at the mercy of the wind and the waves for nearly two hours. The tide finally came to our rescue and we were landed at Brunswick at about 11:50.

The next day all business was settled and the time spent in various ways. Some went sightseeing, some surf bathing and later applying cold cream, and still others tried sea fishing. All that W. E. White of Tifton caught on his line was his finger. He had to submit to an operation to have the hook removed.

At the business meeting a resolution was adopted in protest against the indiscriminate distribution of veterinary biologics and supplies by laboratories and supply houses and their distributors. A resolution was also adopted protesting against county farm demonstration agents for failing to give credit, in their reports, to veterinarians who perform services, such as vaccination of hogs and tuberculin testing of cattle, when such work is merely arranged by the agents.

The out-of-state members who attended were Drs. T. H. Applewhite, Acting Inspector in Charge of Tick Eradication in Georgia and Florida, and H. V. Porter, Assistant State Veterinarian of Florida. Dr. J. V. Knapp, State Veterinarian of Florida, was elected an honorary member of the Georgia association.

Dr. A. G. G. Richardson, Dean of the Veterinary Division at the State College of Agriculture, was recommended for reappointment on

the Georgia State Board of Veterinary Examiners for a period of five years.

The officers elected for the coming year are president, W. E. White, Tifton; vice president, R. M. Walsh, Atlanta; secretary-treasurer, Peter F. Bahnsen, Americus.

The next meeting of the association will be held in Atlanta during the month of September, 1926.

Peter F. Bahnsen, Secretary

RESOLUTIONS ADOPTED BY GEORGIA ASSOCIATION

The following are resolutions adopted by the Georgia State Veterinary Association at the nineteenth annual meeting:

Whereas, the published reports of county agents' activities indicate that some county agents are extensively engaged in hog cholera control work, a service for which they are not prepared nor qualified, and,

Whereas, live stock sanitary control is essentially a veterinary problem, and,

Whereas, the laws of the State of Georgia provide that only those who have secured licenses from the Georgia State Board of Veterinary Examiners are legally authorized to practice veterinary medicine and surgery in the State of Georgia.

Therefore, be it resolved by the Georgia State Veterinary Association, in regular annual session assembled, that the practice of veterinary medicine or surgery, in any of its branches, by county agents is unfair, unjustified and illegal. The Secretary is hereby instructed to present this protest to Director J. Phil. Campbell and to urge the authorities in charge of county agents to restrict their activities to the many useful and necessary services for which they are especially qualified.

Whereas, it has been brought to the attention of the Georgia State Veterinary Association, in regular session assembled, that a number of veterinary supply houses are selling biologics and other veterinary supplies directly and indirectly to live stock owners, through distributors, and,

Whereas, we do not consider such practice ethical to the veterinary profession, nor advantageous to a safe live stock development.

Therefore, be it resolved that this body protest against the continuance of such practice. Should such practice be continued, the confidence in, and further support of such supply houses, by the members of this association will necessarily be disrupted.

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My second case was in a four-year-old Percheron mare, and the owner had offered anyone $50.00 to cure the fistula. One quack and two graduates had failed to pick off the money. After four months had passed the owner came into my office and handed me a $50.00 bill besides my fee of $20.00 for the four boxes of Fistone.

I cannot praise Fistone highly enough, and although I was taught while in school that such treatment was empirical, nevertheless, it is the most humane and ethical treatment any one could ask for.

Thanking you for your wonderful treatment, I remain,

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Enclosed find check for $8.00 for which send me One Dozen, 12-ounce boxes of FISTONE, "An Internal Treatment for Fistula of the Withers, Poll-Evil, Quittor and other Chronic Suppurations."

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Address.....

Send for illustrated literature of Dr. C. A. Clark's Automatic Sanitary Operating Table for Vaccinating Swine.

The annual meeting of the Illinois Veterinary Medical Association will be held at the Lexington Hotel, Chicago, December 1st.

Contributors of articles to Veterinary Medicine frequently receive inquiries from readers direct and are always glad to answer such communications. However, in this connection it is well for inquirers to remember to send a stamped envelope for reply, since in some cases the queries are rather numerous, and while authors of articles are willing to give their time and effort to the answering of such correspondence, they should not be expected to be put to the expense entailed by the cost of postage, which in some instances amounts to a material outlay.

Dr. J. F. DeVine received over a hundred inquiries on his articles with reference to mastitis, pneumonia and metritis in cattle. Drs. Brainard and Woodruff of Cleveland, Ohio, also received numerous requests for their dog book, mentioned in the October issue, and the cost of mailing the volume was 4 cents a copy. So if readers will bear in mind to enclose return postage with their inquiries, the courtesy will be appreciated by those called upon to reply, as well as insuring a prompt response.

MISSOURI SHORT COURSE FOR GRADUATE VETERINARIANS

A short course for graduate veterinarians will be given at the University of Missouri, December 28th, 29th, 30th, and 31st, 1925, under the cooperation of the Missouri Veterinary Medical Association and the College of Agriculture.

The veterinary subjects to be covered will be selected topics in cattle practice, swine diseases, poultry diseases, and the diseases of pet animals. This instruction will be given by lectures, clinical demonstrations and laboratory exercises.

In addition to the strictly veterinary topics, which will be handled by veterinary specialists, lectures and demonstrations will also be given on related subjects of special interest to the veterinarian, by several members of the University faculty. This instruction will include such topics as: Essential Food Elements for Normal Nutrition; The Use of Mineral Feeds; What Constitutes a Profitable Dairy Cow—Illustrated by Dairy Judging and Milk-Test demonstrations; Demonstrations in Culling Poultry; Rations for Egg and Poultry-meat Production; Proper Housing for Poultry; Demonstrations in Cattle and Swine Judging; Hog Lot Sanitation; Physiology of Estrum; Laboratory Exercises in Blood Tests for Abor-

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This special offer is for thirty days only. We have lined up many Veterinarians to represent our Company in the last sixty days and we are very desirous of having you get our proposition before lining up with any organization. We cater to the Veterinary profession and can show you where you can make from a thousand to fifteen hundred dollars per year selling our mineral feed as a sideline. Do not wait any longer as the season of the year is at hand when the farmer is purchasing his winter feeds.

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tion Disease in Cattle and Swine; and White Diarrhea in Chickens; Examination of Feces and Tissues for Eggs and Embryos of Parasites; etc.

Every effort will be made to make the course one of a very practical nature and to minimize as much as possible the theoretical aspects—the purpose being to give to the veterinarians who take the course fuller knowledge and greater skill in lines that will be directly helpful in their every-day veterinary practice.

Among the instructors, not mentioning the resident faculty members, the following specialists are included in the list: Dr. John Adams, President of the A. V. M. A., Professor of Veterinary Surgery, University of Pennsylvania; Dr. E. T. Hallman, Pathologist, Veterinary Division, Michigan State College; Dr. Frederick W. Whipple, Specialist in Diseases of Pet Animals, Peoria, Illinois; Dr. A. T. Kinsley, Specialist on Swine Diseases, Kansas City, Missouri; Dr. Sivert Eriksen, Pathologist Poultry Experiment Station, Mountain Grove, Missouri; Dr. T. H. Ferguson, Lake Geneva, Wisconsin, Specialist on Cattle Practice.

The evening program will be devoted to addresses of a more general interest to the veterinarians, to round-table discussions and to lantern-slide and movie-film demonstrations.

The Home Economics department will make an effort to give several demonstrations on home making topics to the ladies who come with their husbands.

While this course is intended primarily for the practitioners of Missouri, veterinarians from other states are hereby cordially invited to attend.

A fully detailed program will be mailed to the veterinarians of the state, and to others desiring the same, when all arrangements have been completed.

J. W. Connaway, Chairman
Department Veterinary Science
College of Agriculture and Exper. Sta.,
University of Missouri
Fred C. Cater, Secretary
The Missouri Veterinary Medical Assoc.

An illustrated article on laryngoscopy, bronchoscopy, esophagoscopy and gastroscopy in dog and cat practice by Dr. J. G. Horning and Dr. A. J. McKee of Houston, Texas, will be featured in the January issue of Veterinary Medicine.

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The U. S. Department of Agriculture, in cooperation with the Louisiana Experiment Station, Jeanerette, La., is working on the practical application of the scientific theories of feeding and breeding of farm animals. The livestock experiment farm at the station consists of 1000 acres, on which there are 300 head of beef cattle, 98 hogs, 40 mares and mules, 40 goats and 50 head of purebred Jersey cattle. Among the projects being carried on are feeding trials with steers to determine the most economical combinations of concentrates and roughages, Mendelian experiment on cross breeding Brahma bulls with beef cattle, soft port investigations with hogs, improvement of native goats by crossing with purebred rams, experiments with dairy cattle in feeding and breeding. The breeding experiment is not confined to cattle on the farm but includes 500 cattle on 55 private dairy farms where Department bulls are loaned to prove their transmitting ability.

DR. S. B. NELSON COMPLETES THIRTY YEARS WITH WASHINGTON COLLEGE

Thirty years of continuous service to the State College of Washington were completed by Dr. S. B. Nelson, Director of the Extension Service, on September 1. Only one other faculty member, O. L. Waller, vice-president of the college, has been with the state college for a longer period of time.

Dr. Nelson began work September 1, 1895, as professor of veterinary science, veterinarian to the experiment station and state veterinarian. The budget for the first year was only $100, of which $75 was spent to build a lean-to, 16 by 24 feet, to another college building.

This lean-to was the only building used for veterinary science work for some time. Here anatomy, dissection and similar work were taught. It was from this beginning that the present college of veterinary science has grown.

Dr. Nelson held the position of state veterinarian until 1913, when this work was taken over by the department of agriculture. He was relieved of his experiment station duties in 1915.

He accepted the position of director of the extension service in June, 1919, and retained supervision of the college of veterinary science until 1921.

Dr. Nelson has been a member of the American Veterinary Medical Association since 1890, and there are only twelve men who have been members of this national association for a longer period of time.

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Just back of the dawning of the New Year and of many such dawns that are to come, lies—**your future**—the most important thing in the world to you. For it holds your success or failure.

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Extract from recent editorial appearing in a prominent eastern Iowa newspaper:

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"The veterinarians of eastern Iowa might have more to do if they helped to spread disease among Iowa farms. Instead, they seek to help prevent its spread by fair warning of its existence and by helping farmers to provide the ounce of prevention that is worth a pound of cure. . . . . ."

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